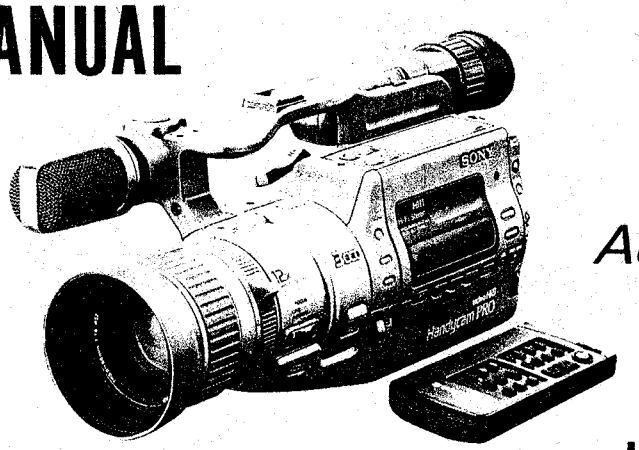
CCD-VX1E
RMT-702

SERVICE MANUAL



AEP Model
UK Model
E Model
Australian Model
Tourist Model

video Hi8
Handycam PRO

A MECHANISM

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system
Four Rotary heads, Helical scanning FM system
Audio recording system
Rotary head, FM system
Video signal PAL colour, CCIR standards
Usable cassette
8 mm video format cassette (Hi8 or standard 8 mm)
Tape speed SP mode: Approx. 20.051 mm (13/16 inches)/second
LP mode: Approx. 10.058 mm (13/32 inches)/second
Recording time
SP mode: 1 hours 30 minutes (E5/P5-90)
LP mode: 3 hours (E5/P5-90)
Playback time SP mode: 1 hours 30 minutes (E5/P5-90)
LP mode: 3 hours (E5/P5-90)
Fast forward/rewind time
Approx. 6.4 min. (E5/P5-90)
Image device 3CCD (Charge Coupled Device 1/3")
Viewfinder Electronic viewfinder (monochrome)
Lens Combined 12 × power zoom lens
f=5.5 to 66 mm (7/32 to 2 5/8 inches)
F1.6 to 1.8
40 to 480 mm (1 5/8 to 2 1/8 inches) when converted into a 35-mm still camera
Filter diameter 52 mm (2 1/8 inches)
TTL autofocus system
Inner focus wide macro system

Colour temperature
Auto
Indoors (3200 K)
Outdoors (5800 K)
Minimum illumination
4 lx (F1.6)
Illumination range
4 lx to 100,000 lx
(0.37 to 9.294 footcandles)
Recommended illumination
More than 100 lx (9.3 foot candles)
Shutter speed control
1/50 to 1/10000 (16 steps)
Aperture control
Auto/manual (12 steps)
Gain control Auto/manual (8 steps)

Input and output connectors

S video input/output (AEP/UK model: Output only)
4-pin mini-DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.3 Vp-p
75 ohms, unbalanced

— Continued on next page —

MICROFILM

Hi 8 VIDEO CAMERA RECORDER

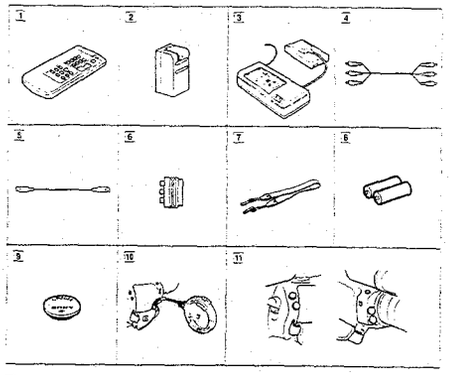
SONY®

Video input/output (AEP/UK model: Output only)
Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio input/output (AEP/UK model: Output only)
Phono jacks (2: stereo L and R)
Input: –7.5 dBs, input impedance more than 47 kilohms
Output: –7.5 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT jack
Special mini-jack, 5 V DC (1)
Headphones jack
Stereo minijack (ø 3.5) (1)
REMOTE jack Stereo mini-minijack (ø 2.5) (1)
MIC jack Stereo minijack (1), –66 dBs, low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms (ø 3.5)
MIC DC OUT jack
Special minijack, 5 V DC

General

Power requirements
On battery mounting surface
6.0 V (battery pack)
7.5 V (AC power adaptor)
Power consumption
9.4 W (camera recording)
Installation Vertically, horizontally
Operating temperature
0° C to 40° C (32° F to 104° F)
Storage temperature
–20° C to +60° C (–4° F to 140° F)
Dimensions 116 × 148 × 352 mm (w/h/d)
(4 5/8 × 5 7/8 × 13 7/8 inches)
(including the lens hood)
Mass Approx. 1.5 kg (2 lb. 7 oz.)
Approx. 2.0 kg (4 lb. 7 oz.)(including the battery pack NP-77H, lithium battery CR2025, cassette E5-90, jack covers, shoulder strap, lens hood, hood cap)
Microphone *Electret condenser microphone*, stereo type

Checking Supplied Accessories



1 Wireless Remote Commander (1)(p.24, 83)

2 NP-77H Battery pack (1)(p.7)

3 AC-V35 AC power adaptor (1)(p.7, 28)

4 A/V connecting cable (1)(p.22, 71)

5 S video connecting cable (1)(p.22, 71)

6 21-pin adaptor (1)(p.22)

7 Shoulder strap (1)(p.84)

8 R6 (Size AA) batteries for the Remote Commander (2)(p.6)

9 CR2025 lithium battery (1)(p.11)

10 Hood cap (1)(p.16)
This is attached to the camcorder.

11 Jack covers (1 set)
These are attached to the camcorder.

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

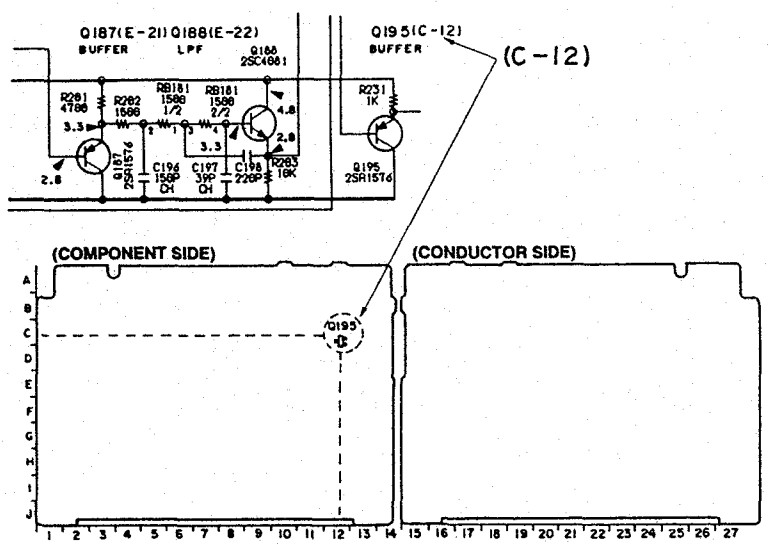
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 158, 170, 171, 206, 207.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [❖] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

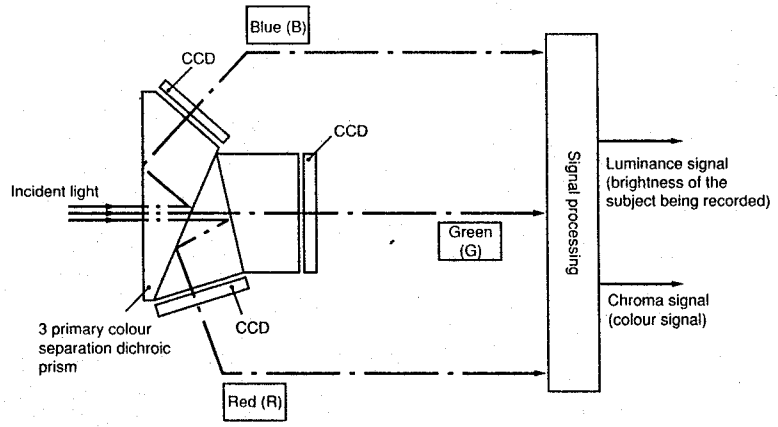
SECTION 1
GENERAL

This section is extracted from instruction manual of AEP/UK model.

Before You Begin

About This Camcorder

The CCD-VX1E is a high picture quality Hi8 camcorder that uses the same 3CCD camera system found in professional video camera recorders. This system employs high density three-chip precision Charge Coupled Devices (CCDs). Each CCD image has a total of about 410,000 picture elements. An image projected by the lens is separated into three primary colours, red(R), green (G) and blue (B). Each CCD outputs a single-colour picture signal.
As a result, the camcorder achieves remarkably high resolution, equal to that of a professional video camera. In addition, the system provides excellent brightness and colour reproduction capabilities that allow the camcorder to record images that are faithful to the original.

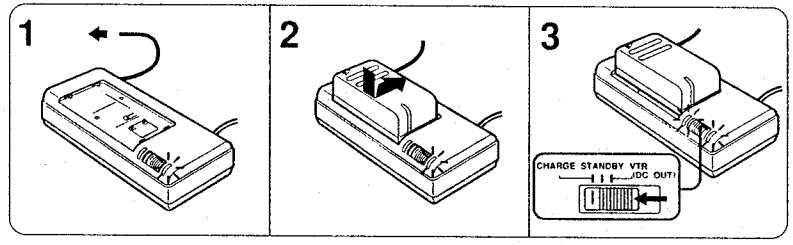


Getting Started

Charging and Installing the Battery Pack

Charging the Battery Pack

Before using your camcorder, you first need to charge and then insert the battery pack. You can use the NP-77H (supplied), NP-77HD and NP-77. Charge the battery pack with the supplied AC-V35 AC power adaptor. (1) Connect the AC power adaptor to a wall outlet. The green POWER lamp on the adaptor lights. (2) Align the right side of the battery pack (indicated by the ▶ mark) with the line on the AC power adaptor. Push down and slide the battery pack in the direction of the arrow. (3) Set the CHARGE/VTR switch to CHARGE. The orange CHARGE lamp lights and charging begins. When charging is completed, the orange lamp goes out.



Charging time and battery life

Type of battery pack	Charging time*	Battery life**
NP-77H (supplied)	2 hours 20 minutes	1 hour 15 minutes
NP-77HD	2 hours 20 minutes	1 hour 15 minutes
NP-77	2 hours	1 hour 10 minutes

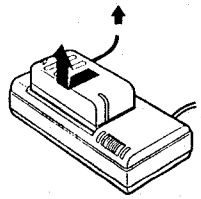
* Approximate charging time to charge an empty battery pack using the AC-V35 after discharging completely (Note that lower temperatures require a longer charging time.)
** Approximate continuous recording time indoors

Usable battery charger
- AC-S10, AC-V55 and AC-V30 AC power adaptor
- BC-S10, BC-55 and BC-77 portable battery charger
- DC-S10 and DC-V30 car battery charger

Never use the battery charger other than the one recommended.

Detaching the Battery Pack

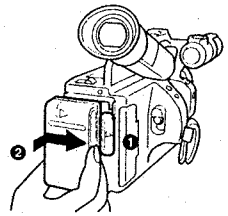
Slide the battery pack in the direction of the arrow.



Charging and Installing the Battery Pack

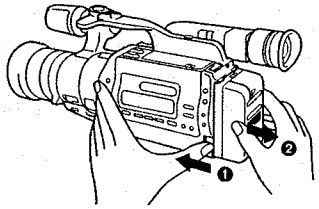
Installing the Battery Pack into the Camcorder

Align the right side of the battery pack with the white line on the camcorder. Slide the battery pack to the right.



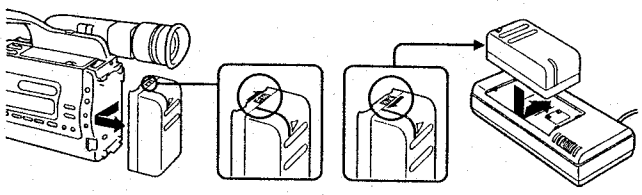
Removing the Battery Pack

While pressing BATT, slide the battery pack out to the left.



The switch on the battery pack

This switch is provided to help you remember the charging status of the battery. Set the switch to the "no mark" position after charging. (When detached from the AC power adaptor, expose "no mark". When detached from your camcorder, expose the red mark.)



Tips for Using the Battery Pack

Notes on Charging

Before using the battery pack

Before using a brand-new battery pack, charge it sufficiently. Before recharging a used battery pack, make sure to use it up. Charging the still usable battery causes a lowering of battery capacity. If recording is completed before the battery indicator appears inside the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, slide the STANDBY switch up, and leave the camcorder until the battery indicator flashes rapidly. You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 85°F). Lower temperatures require a longer charging time.

After long storage

Recharge the battery pack after a long period of storage.
If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Preparing the Battery Pack

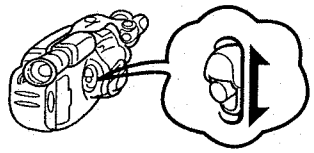
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is measured by continuous camcorder recording time, at a room temperature using a fully-charged battery. Keep in mind that battery is also used by the camcorder when:

- You insert or eject a tape.
- You set the camcorder to standby mode.
- You set the POWER switch to PLAYER.

To save battery power when not recording, push the STANDBY switch down to cover the START/STOP button.

A smooth recording can be made even if recording is stopped and started again.



Battery life is shortened in a cold environment

Battery efficiency is decreased and the battery wears out more quickly in cold weather.

Notes on the Battery Pack

Notes

- Do not allow any metal surfaces to touch the metal parts, or short circuiting may occur. To prevent short circuit, use the terminal cover after use.
- Keep the battery pack away from fire, as it may explode.
- Do not attempt to open the battery pack.
- Do not expose the battery pack to rain or moisture.
- Avoid any mechanical shock.

Battery heat up is normal

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Charging and Installing the Battery Pack

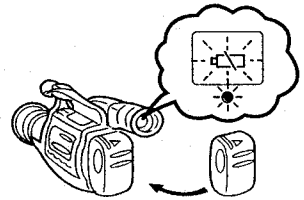
The life of the battery pack
The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Note on the terminals
If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, install and remove the battery pack from time to time. This improves the contact condition. Also, wipe the + and – terminals with soft cloth or paper.

Battery Remaining Indicator

You can check the remaining battery capacity by looking at the indicator in the viewfinder. The decreasing black bar indicates decreasing battery power. Note that the indicator shows an approximate amount of remaining battery capacity. The amount may vary with the type of battery packs.

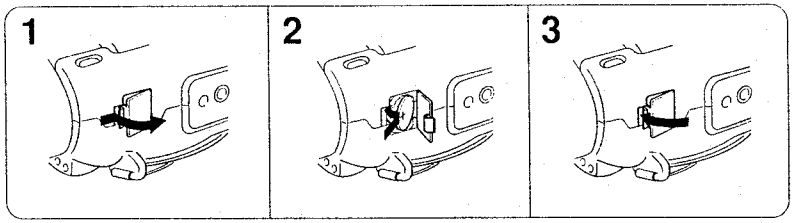
When to replace the battery pack
You can check the remaining battery capacity by looking at the battery life indicator in the viewfinder. When the indicator and the battery lamp in the viewfinder change from slow to rapid flashing, replace the battery pack. Set the POWER switch to OFF, and replace the battery pack. Leave the tape in the camcorder in order to obtain a smooth transition when you begin recording again.



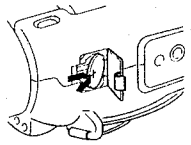
Setting the Date and Time

Installing the Lithium Battery

To keep a title in the camcorder's memory, as well as to activate the clock, you must first install a lithium battery. (1) Push to open the lithium battery compartment lid at the bottom of the camcorder. (2) Install the supplied battery with the positive (+) terminal facing up. (3) Close the battery compartment lid.

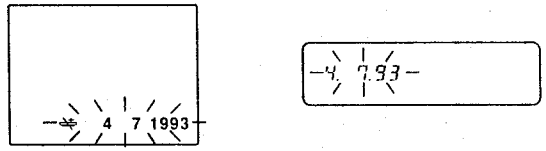


To change the lithium battery, push the battery in the direction of the arrow and pull it out to remove.



Lithium Battery Life

The lithium battery lasts for about one year under normal operation. When the battery becomes weak or dead, the indicator and the date or time indicator flash six times inside the viewfinder and the tape counter, or the date or time indicator keeps flashing in the display window when you set the POWER switch to CAMERA. **Replace the battery with the Sony CR2025 lithium battery. Using another battery may present a risk of fire or explosion.**



While replacing the battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and title.

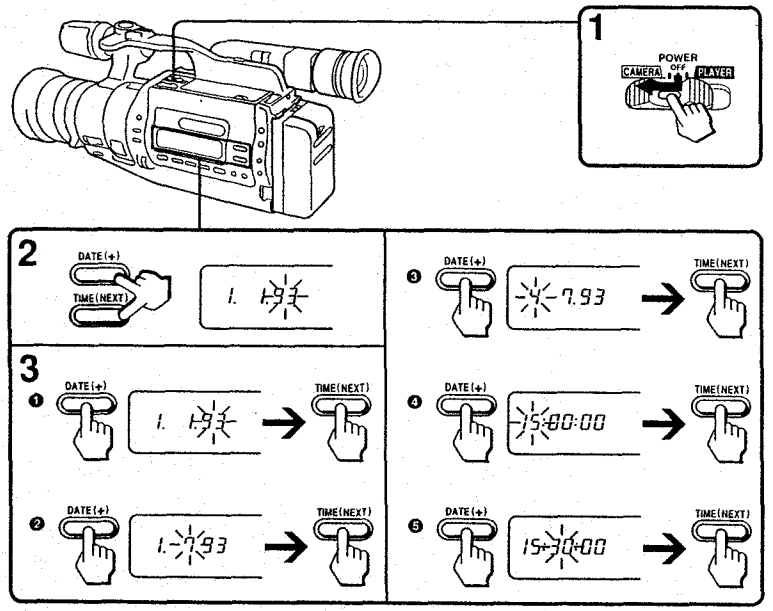
WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution
Keep the lithium battery out of the reach of children. If the battery is swallowed, consult a doctor immediately.

Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed. (1) While pressing the small green button on the POWER switch and slide it to CAMERA or OFF. (2) Press DATE(+) and TIME(NEXT) simultaneously until "1.1.93" flashes in the display window. (3) Adjust the flashing digits for the year, month, day and hour by pressing DATE(+) and TIME(NEXT). To set the year to 1993, there is no need to press DATE(+) in step 3-❶. Note that when you keep DATE(+) pressed, the digits advance faster.



To Correct the Date and Time Setting

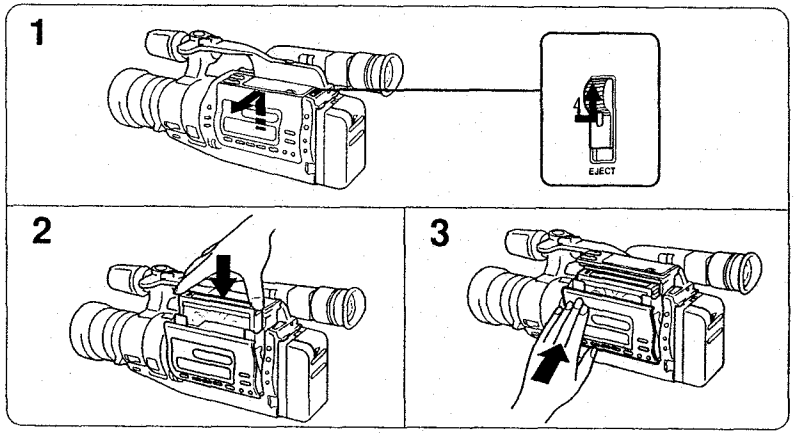
Repeat steps 2 and 3.

To Check the Preset Date and Time

Press DATE(+) to display the date indicator in the display window. Press TIME(NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

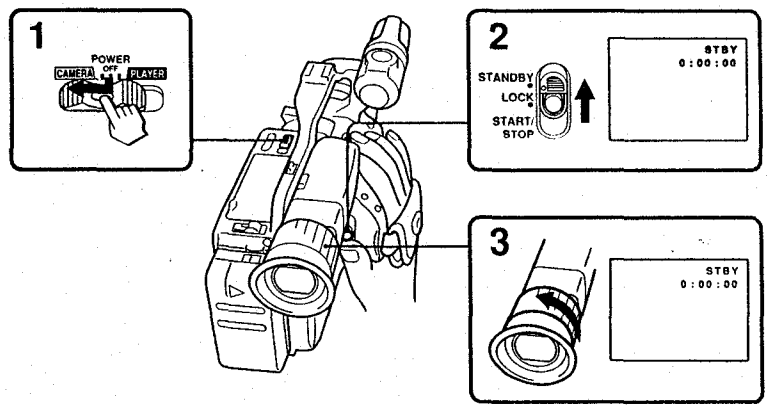
Inserting a Cassette

Make sure that a power source is installed. (1) While pressing the small blue button on the EJECT knob, slide it in the direction of the arrow. The cassette compartment automatically lifts and opens. (2) Insert a cassette (not supplied) with the window facing out. (3) Press the PUSH mark on the cassette compartment cover to close it.
To eject the cassette, slide the EJECT knob while pressing the small blue button on it.



Adjusting the Viewfinder Lens

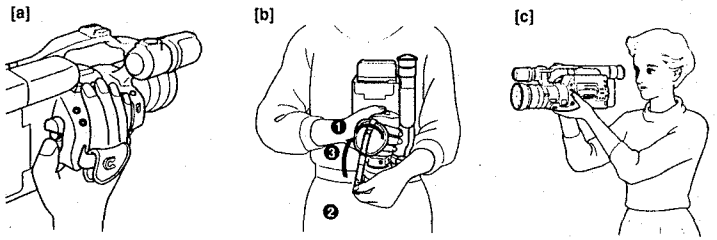
Before you use the camcorder for the first time (or after someone else has used it), focus the viewfinder lens. Make sure that the power source is connected to the camcorder. (1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Slide the STANDBY switch up. (3) Turn the viewfinder lens adjustment ring so that the "STBY" indicator in the viewfinder comes into sharp focus.



Hints for Better Shooting

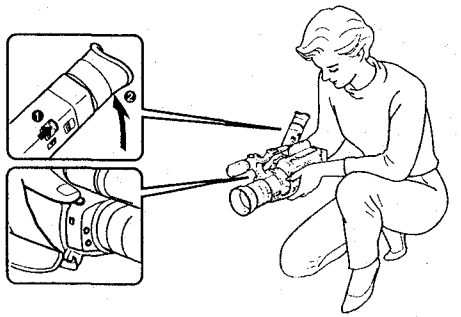
For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**. To adjust the grip strap, hold the camcorder against your body **[b]**.
- Place your left hand under the camcorder to support it.
- This camcorder is equipped with a Sports Finder. You can look through the viewfinder without touching your eye to the eyecup **[c]**. To do so, turn the viewfinder adjustment ring clockwise completely.
- Use the viewfinder frame as a guide to determine the horizontal plane.



To record in a low position

You can also record in a low position to get an interesting recording angle. Push the RELEASE knob in the direction of the arrow to lift up the viewfinder. It can be turned up to 90° degrees. To start and stop recording, press REC START/STOP.

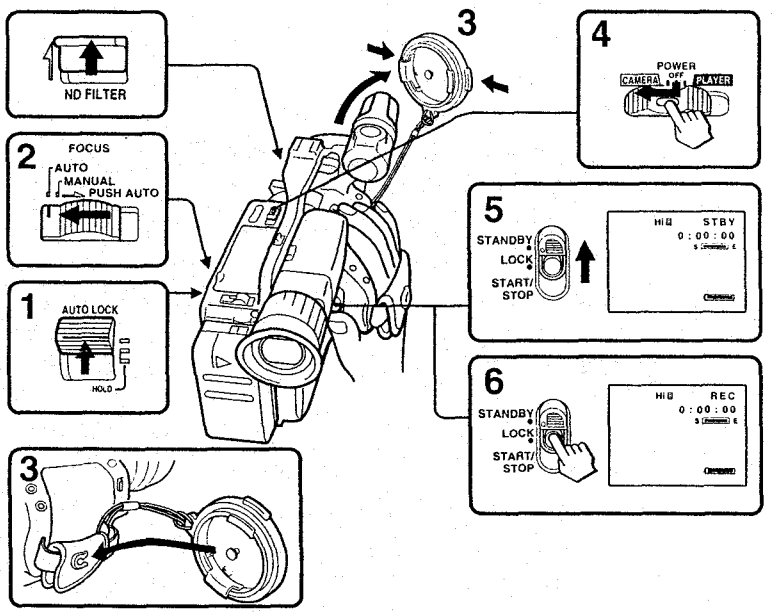


Place the camcorder on a flat surface or use a tripod for stable shooting

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.80). To avoid damaging the camcorder, make sure the tripod screw is shorter than 6.5 mm (9/32 in).

Camera Recording

Make sure that a power source is installed and a cassette is inserted. You can obtain a worry-free camera recording with the camcorder's full-automatic functions. Before you record one-time events, you may want to make a test recording to make sure that you are using the camcorder correctly. (1) Slide the AUTO LOCK switch up to the topmost (green) position for automatic adjustment (p.31). (2) Set the FOCUS switch to AUTO. (3) Remove the hood cap by squeezing its tabs and hook it to the cap holder on the grip strap. (4) While pressing the small green button on the POWER switch, slide the POWER switch to CAMERA. (5) Slide the STANDBY switch up until it snaps into STANDBY. (6) Press START/STOP. The camcorder starts recording, the "REC" indicator appears in the viewfinder, and the recording lamps light up inside the viewfinder and on the camcorder.
You can also select recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE in the menu system (p.30) according to the length of your planned recording before you start recording.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (standby mode).

To Finish Recording

Push the STANDBY switch down to cover the START/STOP button and slide the POWER switch to OFF. If you do not expect to continue shooting, eject the tape. (p.13)

Note on the internal ND filter

Although the camcorder may be set for automatic use, the ND filter is still controlled manually. We recommend that you use the internal ND filter when the "ND ON" indicator flashes upper left corner inside the viewfinder. If the "ND OFF" indicator flashes, using the ND filter is not recommended. See page 18 for details about the ND FILTER switch.

Note on standby mode

If you leave the camcorder in standby mode for five minutes or more with a cassette inserted, the camcorder automatically switches off. This prevents wear on the battery and the tape. To resume standby mode, slide the STANDBY switch down once and slide it up again. To start recording, press START/STOP.

Shooting close subjects

If you cannot get a sharp focus, press the W side of the power zoom button until the focus sharpens.

Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.

Note on recording mode

This camcorder records in the SP mode (approximately 20.051 mm/second) and in the LP mode (approximately 10.058 mm/second) and can play back in the SP mode and LP mode. The quality of the playback picture in the LP mode, however, will not as good as that in the SP mode.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on the indicators inside the viewfinder

The remaining tape and remaining battery indicators are always displayed in the viewfinder to help you to check the approximate amount of the tape left and the remaining battery capacity. For the remaining battery indicators, see page 10.

If the battery touches your nose

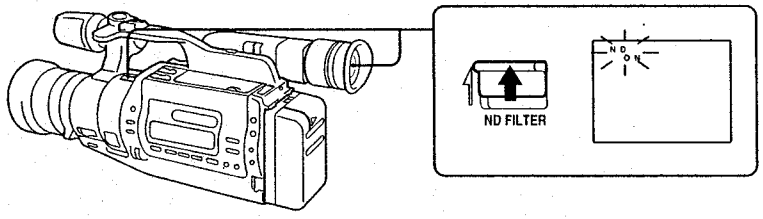
While pressing the SLIDE button, slide the viewfinder towards you.

To monitor the sound to be recorded while recording

Connect headphones (not supplied) to the Ω jack.

Using the Internal ND Filter

You can shoot a bright scene clearly with the internal ND filter.
If the "ND ON" indicator flashes in the viewfinder while recording, slide the ND FILTER switch in the direction of the arrow. The internal ND filter automatically activates and the indicator stops flashing.



When the "ND ON" indicator turns off and the "ND OFF" indicator flashes in the viewfinder
This indicates that the lighting condition does not need the ND filter. Slide the ND FILTER switch again so that the indicator disappears.

Note
Before sliding the ND FILTER switch, set the camcorder to standby mode. If you switch during recording, the picture may shake momentarily and the switching noise may be recorded.

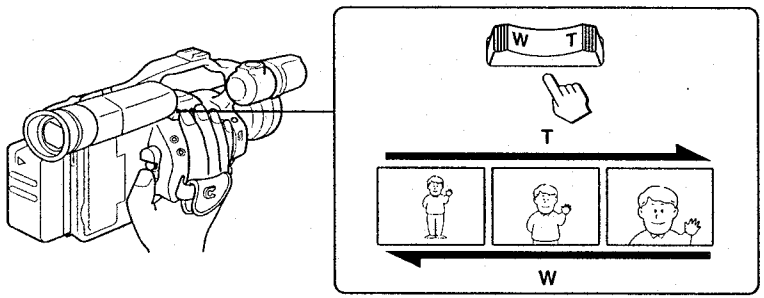
Shooting under fluorescent, sodium, or mercury lamps
The recorded picture may flicker or colour of the picture may vary. In such case, set the ND SHUTTER mode to OFF in the menu system. (p.48)

ND shutter feature
In addition to the ND FILTER switch, this camcorder incorporates the ND shutter feature. See "Using an Optional ND (Neutral Density) Filter" on page 48 for details.

ND (Neutral Density) filter
This is a filter that reduces the amount of incident light without affecting the colour. The internal ND filter of this camcorder reduces the amount of incident light to one-tenth.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use zoom to focus manually or to decide on a shooting angle before you start recording. For more professional-looking recordings, use the zoom sparingly.
T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)



Zooming speed
Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

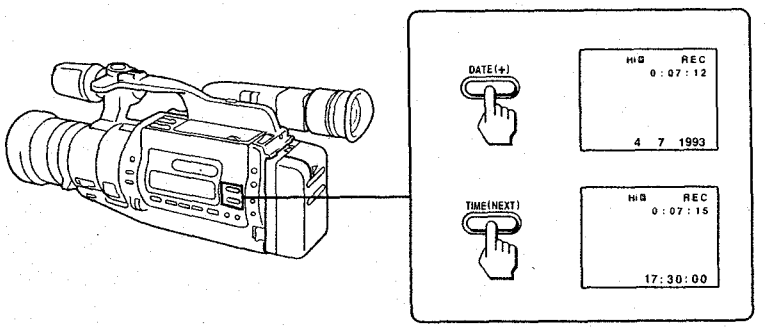
Manual zooming
You can also zoom using the manual zoom lever. Manual zooming enables you to control zooming speed precisely. Turn the manual zoom lever upward for telephoto shots and downward for wide-angle shots.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus sharpens.
You can shoot a subject that is at least 1.2 m (about 4 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inch) in the wide-angle position.

Manual focusing in macro
You can also shoot with manual focus while doing close-ups (p.36).

Recording the Date or Time

In camera mode, press DATE (+) or TIME (NEXT). You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no other indicators in the viewfinder are recorded.

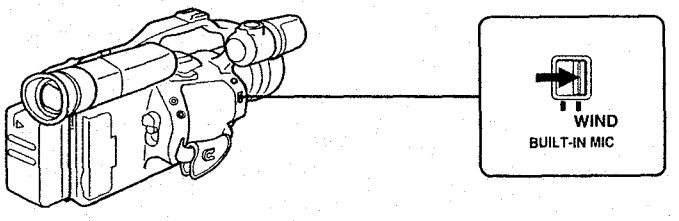


To Stop Recording the Date or Time

Press DATE (+) or TIME (NEXT) again. Recording continues.

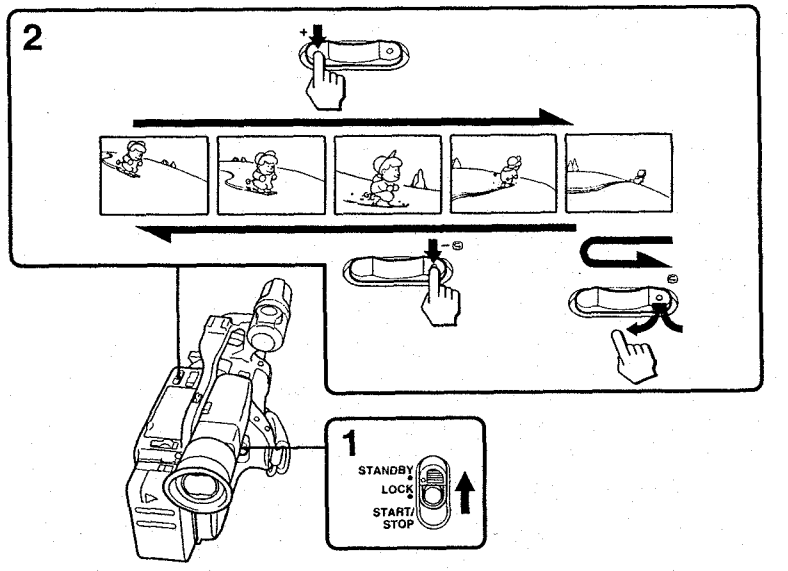
Recording in a Strong Wind

Set the BUILT-IN MIC selector to WIND. The noise resulting from wind will be reduced. Be sure to set it to the green mark position after recording.
When recording with an external microphone connected to the MIC jack, set the selector to the green mark position.



Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH in camera mode, you can review the last recorded scene or check the recorded picture in the viewfinder. (1) Slide the STANDBY switch up until it snaps to STANDBY. (2) Press EDITSEARCH. Press the – (⊖) side momentarily, and the last few seconds of the recorded portion plays back **(Rec Review)**. Keep pressing EDITSEARCH to play back the last recorded portion **(Edit Search)**.
+ side: to view the forward playback picture
– side: to view the reverse playback picture



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the Ω (headphones) jack. Play back the tape in PLAYER mode (p.24).

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

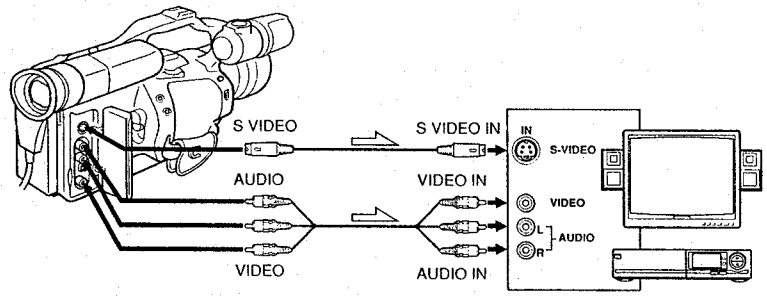
Connections for Playback

You can use this camcorder as a VTR by connecting it to your TV for playback. There are two ways to connect your camcorder to a TV:

- With video/audio input jacks or through a VTR
- Without video/audio input jacks

Connecting to a TV with Video/Audio Input Jacks or through a VTR

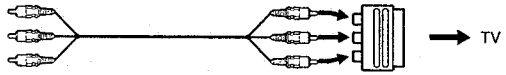
Connect the camcorder to your TV using the supplied connecting cable. Set the TV/VTR selector to VTR on the TV. When connecting the camcorder to VTR, set the input selector on VTR to LINE.



: Signal flow

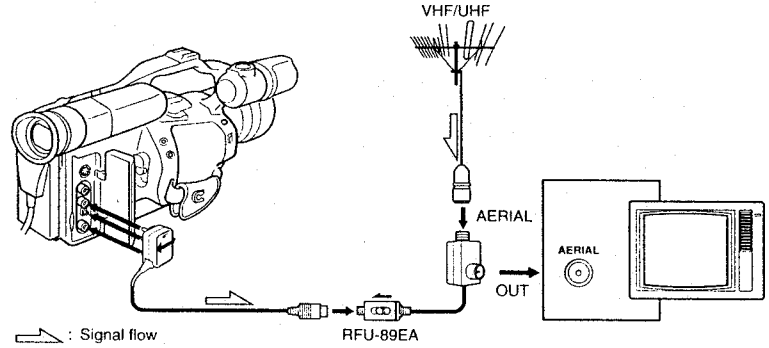
If your TV or VTR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VTR. With this connection, the sound is in monaural.
If you are going to connect the camcorder using the S video connecting cable, you do not need to connect the yellow (video) plug of the A/V connecting cable.

If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.



Connecting to a TV without Video/Audio Input Jacks

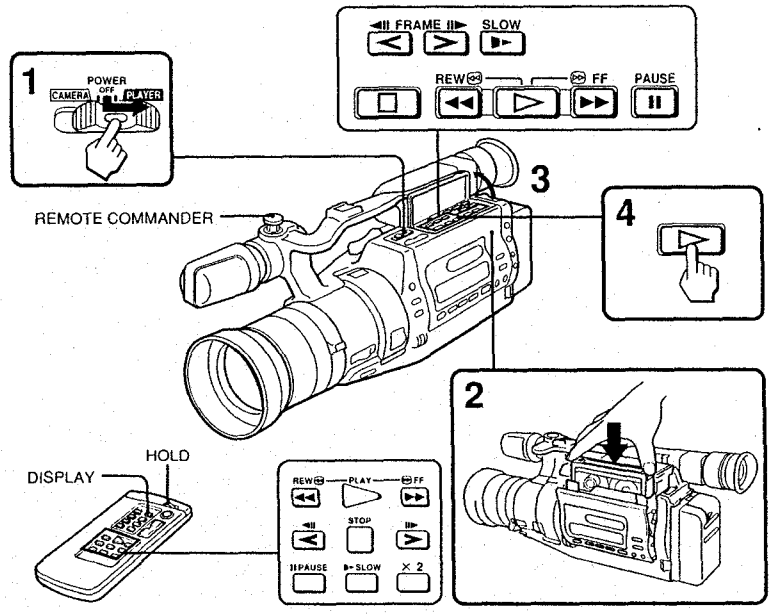
Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor.
The following illustrates the connection of the RFU-89EA as an example.



: Signal flow

Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VTR (p.22). You can control playback using the supplied Remote Commander (p.83). Before using the Commander, press REMOTE COMMANDER on the camcorder lightly so that the remote sensor pops up. Then slide the HOLD switch in the direction opposite the arrow. (1) While pressing the small green button on the POWER switch, slide it to PLAYER. (2) Insert the recorded tape with the window facing out. (3) Open the lid to the control panel. (4) Press ▷. Playback starts.



To stop playback, press □.

To rewind the tape, press ◀◀.

To advance the tape rapidly, press ▶▶.

To display the viewfinder screen indicators on the TV
Press DISPLAY on the Remote Commander.
To remove the displayed indicators, press DISPLAY again.

To select the monitor sound
Change the "HIFI SOUND" mode setting in the menu system (p.73).

Various Playback Modes

To view a still picture (playback pause)
Press II during playback. To resume playback, press II or ▷.

To locate a scene (picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor a high-speed picture during fast-forward or rewind (skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture frame-by-frame
Press </◀II or >/II▶ in still mode. If you keep pressing the button, you can view the picture at 1/25 speed. To resume normal playback, press ▷.

To change the playback direction
Press </◀II for reverse direction or >/II▶ for forward direction during playback. To resume normal playback, press ▷.

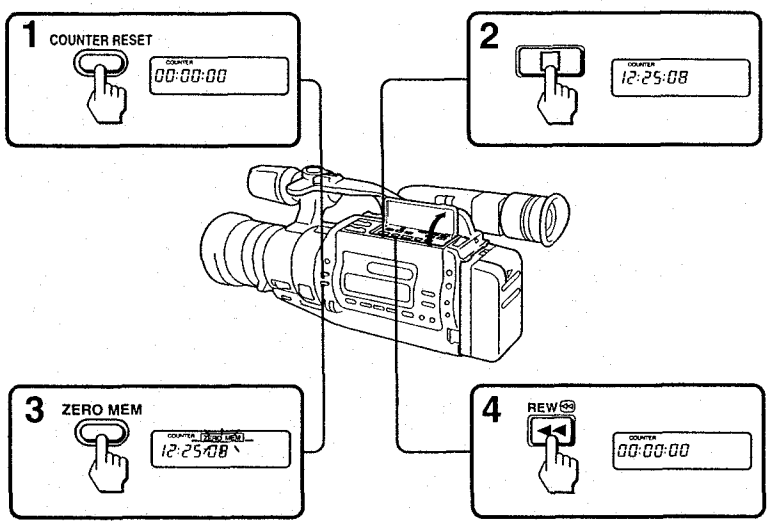
To view the picture at 1/5 speed (slow playback)
For reverse slow playback, press </◀II, then press I▶ during normal playback. For forward slow playback, press >/II▶, then press I▶ during normal playback. To resume normal playback, press ▷.

To view the picture at double speed (only with the Remote Commander)
For double speed playback in the reverse direction, press </◀II, then press ×2 on the Commander during normal playback. For double speed playback in the forward direction, press >/II▶, then press ×2 during normal playback. To resume normal playback, press ▷.

Notes on playback
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.
- The sound is muted in the various playback modes. It can be heard in the double speed forward playback, but is a little noisy.
- Noise may appear in still or slow playback mode. You can adjust the picture by displaying the "PICTURE ADJUST" mode setting in the menu system (p.65).

Returning to a Preset Point—Zero Memory Function

The tape counter displayed in the viewfinder and the display window tells you the actual recording or playback time. You can use the tape counter to memorize a specific point on the tape and play back from that point.
If the TC indicator appears in the display window, press COUNTER/TIME CODE to turn off the indicator.
(1) During playback, press COUNTER RESET at the point you later want to locate. The counter shows "00:00:00". (2) Press □ when playback has finished. (3) Press ZERO MEM. The ZERO MEM indicator flashes. (4) Press ◀◀. The tape rewinds and stops automatically when the counter reaches approximately zero.



To Cancel the Zero Memory Function

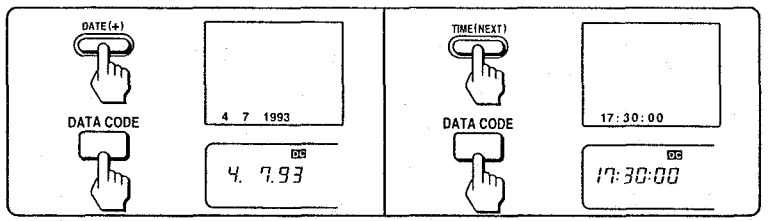
Before pressing ◀◀, press ZERO MEM again to turn off the ZERO MEM indicator.

Note on the tape counter

There will be a time lag of several seconds from the actual time, especially when you fast-forward or rewind repeatedly. This also happens if you play back a tape recorded in mixed LP (Long Play) and SP (Standard Play) modes.

Displaying the Recorded Date or Time—Data Code Function

The Data Code function lets you display the recording date or time during playback, even if you did not record with the date or time. You can display the date or time in the viewfinder, the display window, and on the TV screen. Press DATE(+) or TIME(NEXT) on the camcorder or DATA CODE on the Remote Commander. Each time you press DATA CODE, the display changes to the date, time and no indicator, cyclically.



Note on the data code displayed

The -:--:-- appears in place of the data code when you play back:

- a blank portion of the tape
- a tape where the data code is illegible because of tape damage or noise.
- a tape recorded without the date and time preset
- a tape recorded on a video camera recorder that does not have the data code
- the tape in reverse by keep pressing – side of EDITSEARCH.

Note on the indicators inside the viewfinder

When displaying the data code, other indicators inside the viewfinder disappear. This is normal. Press DISPLAY to display them again.

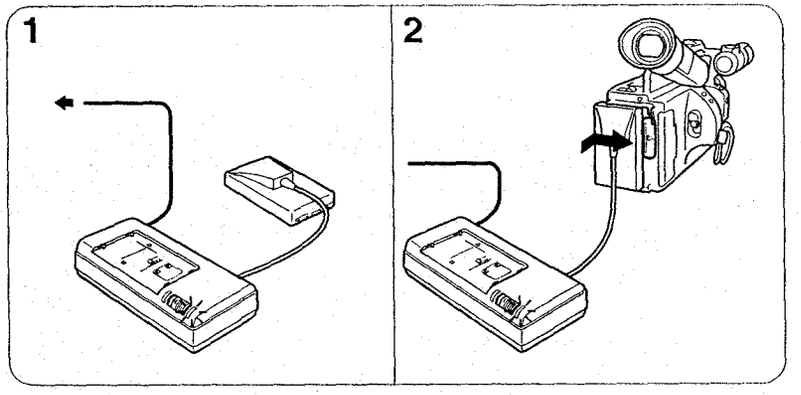
Advanced Operations

Using Alternative Power Sources

This section describes alternative power sources you can use for your camcorder: battery pack (p.7), house current and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Using House Current

Use the supplied AC-V35 AC power adaptor. (1) Connect the power cord to a wall outlet. The green POWER lamp lights. (2) Align the right side of the connecting plate with the white line on the camcorder and slide it to the right.

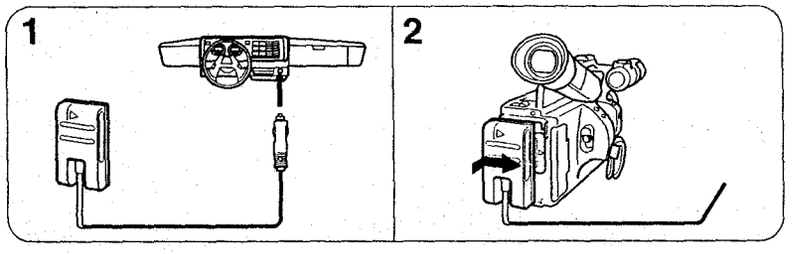


To detach the connecting plate
The connecting plate is detached the same way as the battery pack (p.8).

Note on AC power adaptor
You cannot use the AC-V25 AC power adaptor (not supplied) with this camcorder.

Using a Car Battery

Use the DCP-77 DC pack (not supplied). (1) Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). (2) Align the right side of the DC pack with the white line on the camcorder, and slide it to the right.



To detach the DC pack
The DC pack is detached the same way as the battery pack (p.8).

Other option
You can also use the AC-V55 AC power adaptor and the DCC-16AE car battery cord.

Changing the Mode Settings

To further enjoy the features and functions of the camcorder you need change the mode settings in the menu system. You can change the settings of the following items, displaying the menu in the viewfinder or the TV screen if connected to a TV. For details about each item, see the pages indicated.

Selecting the Mode Setting of Each Item

Items for CAMERA Mode

REC MODE (p.17)
- Select SP to record in the SP (standard play) mode.
- Select LP to record in the LP (long play) mode. It is useful for recording a long continuous programme. The quality of the playback picture in the LP mode, however, will not as good as that in the SP mode.

Hi8 (p.73)
- Select AUTO to have the camcorder automatically set the recording mode (Hi8 or standard 8 mm) depending upon cassette type being used.
- Select OFF to record a Hi8 tape in standard 8 mm format.

ND SHUTTER (p.48)
- Normally select AUTO.
- Select OFF when shooting with the optional ND filter attached to the camcorder.

FADER (p.50)
- Select BLK (black) when using the black fade function.
- Select WHT (white) when using the white fade function.

ZEBRA (p.49)
- Select OFF when shooting without the zebra pattern displayed in the viewfinder.
- Select ON when shooting with the zebra pattern displayed in the viewfinder.

FRAME REC (p.51)
- Normally select OFF.
- Select ON to make frame recording.

INT REC (p.52)
- Normally select OFF.
- Select ON to make Interval recording.
- Select SET to set the Waiting time and the Recording time for Interval recording.

CUSTOM MODE (p.58)
- Normally select OFF.
- Select ON to make camera recording based on the setting mode preset in the CUSTOM MODE menu.
- Select SET to preset the desired Custom mode.

Items for PLAYER Mode

EDIT (p.71)
- Normally select OFF.
- Select ON to minimize the picture and sound deteriorations when editing.

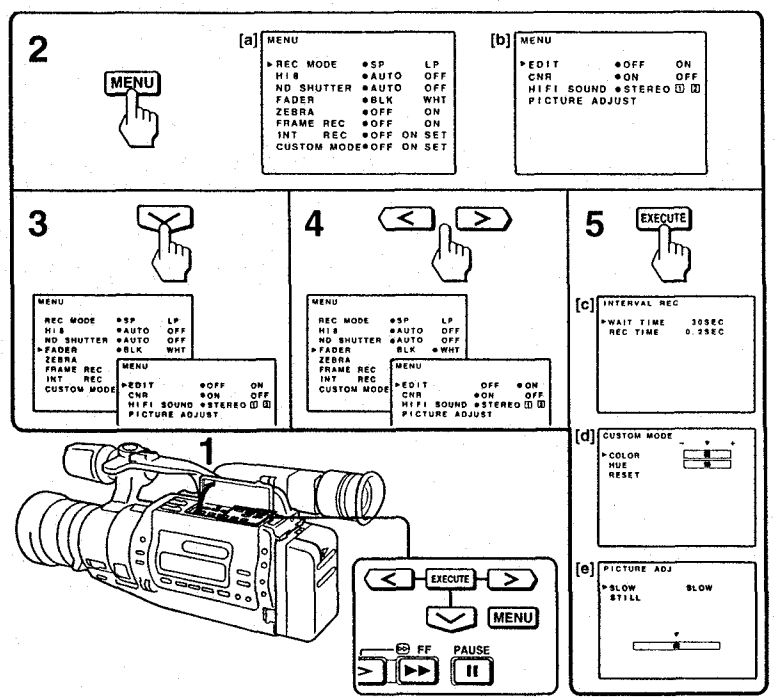
CNR (p.66)
- Normally select ON. You can reduce colour noise in the playback picture.
- Select OFF to eliminate "colour lag" that may be caused by selecting CNR ON in the playback picture.

HIFI SOUND (p.73)
- Normally select STEREO.
- Select [1] or [2] to play back a dual soundtrack tape.

PICTURE ADJUST (p.65)
Select this item to adjust a still or slow playback picture. You can adjust in the PICTURE ADJUST menu.

Changing the Mode Settings

(1) Open the lid of the control panel. (2) Press MENU to display the menu in the viewfinder. **([a]** Menu for CAMERA mode, **[b]** Menu for PLAYER mode) (3) Press v to move the cursor ► and select the desired item. (4) Press < or > to move • and select the desired mode. If you want to change other item, repeat steps 3 and 4. (5) Press EXECUTE to store the setting and erase the menu display. When you select INT REC SET, CUSTOM MODE SET or PICTURE ADJUST in steps 3 and 4, the respective setting menu is displayed to enable further settings (**[c]**-**[e]**).



Notes on the menu system

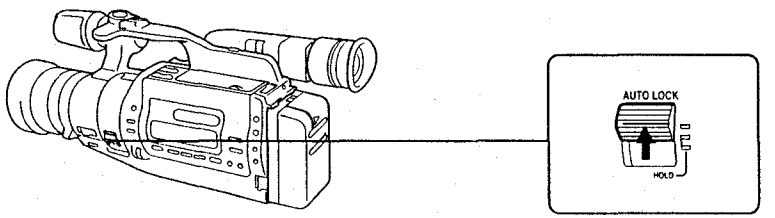
- To display the menu on the TV screen, press DISPLAY.
- To erase the menu display before executing, press MENU.
- To set two or more items in the menu at a time, move the cursor ► to select another item with v before pressing EXECUTE.
- Only when the lithium battery is installed, the settings are saved for five minutes even if you detach the power source. The settings in the INTERVAL REC menu and the CUSTOM MODE menu are saved until you change the settings, if the lithium battery is installed.

Selecting Automatic or Manual Adjustment Modes

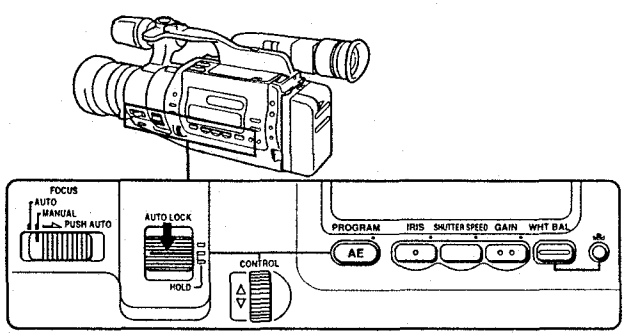
This section shows you how to record using manual adjustment functions. The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some conditions, however, manual adjustment is better for creative recording.

Automatic Adjustment Mode

Slide the AUTO LOCK switch up to the topmost (green) position. In automatic mode, the camcorder adjusts the aperture, shutter speed (1/50 to 1/215), gain and white balance automatically. It also adjusts the focus automatically by setting the FOCUS switch to AUTO.



Slide the AUTO LOCK switch down to the center position. In manual mode, you can adjust the aperture, shutter speed, gain and white balance. Only the settings you make during manual adjustment are changed. The other settings remain as they were in automatic adjustment mode. You can focus manually by setting the FOCUS switch to MANUAL. For details about each mode, see the page indicated.



IRIS (p.43)
(1) Press IRIS. The aperture is locked at the actual value. (2) Turn the CONTROL dial to adjust the desired aperture. You can select from 12 values, from F1.6 to F11.

SHUTTER SPEED (p.43)
(1) Press SHUTTER SPEED. The shutter speed is locked at the actual speed. Each time you press this button, the shutter speed changes: Locked at the actual speed (1/50 – 1/215) → 1/120 → 1/1000 → Automatic (1/50 – 1/215), cyclically. (2) Turn the CONTROL dial to adjust the desired shutter speed. You can select from 16 speeds, from 1/50 to 1/10000.

Selecting Automatic or Manual Adjustment Modes

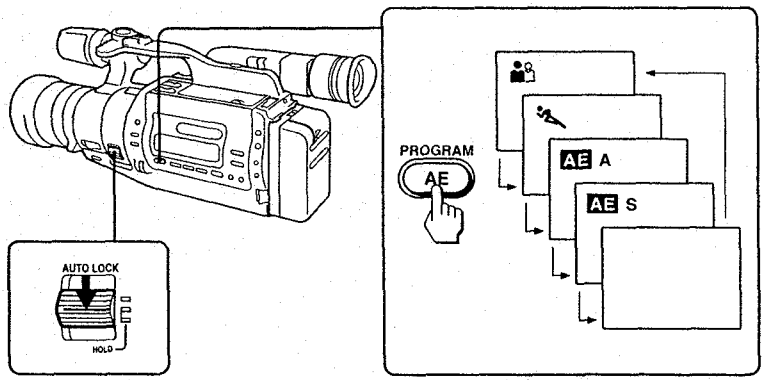
GAIN (p.43)
(1) Press GAIN. The gain is locked at the actual level. (2) Turn the CONTROL dial to adjut the desired gain level. You can select from 8 gain levels, from –3 dB to +18 dB.

WHITE BALANCE (p.37)
- Each time you press WHT BAL, the mode changes: No indicator (auto) → (one-push adjustment) → (outdoors) → (indoors), cyclically.
- When you press the button in one-push adjustment mode, you can lock the white balance and record scenes without being affected by the ambient light.

FOCUS (p.34)
- When you set the FOCUS switch to MANUAL, you can adjust the focus manually regardless of the setting to the AUTO LOCK switch.
- As long as you push the FOCUS switch in the direction of the arrow (PUSH AUTO) during manual focus mode, you can shoot with automatic focusing.

PROGRAM AE Modes

You can select from four PROGRAM AE modes to fit the shooting situation. Set the AUTO LOCK switch to the center position, then select the desired mode by pressing PROGRAM AE. Each time you press the button, the indicator inside the viewfinder changes: (Portrait) → (Sports) → AE A(Aperture Priority) → AE S(Shutter Priority) → No indicator(Manual), cyclically.



Portrait Mode (p.39)
Use Partrait mode to get a portrait effect (the subject in focus and the background out of focus). Press PROGRAM AE so that appears in the viewfinder and the display window. The aperture and shutter speed are automatically adjusted depending on the size and brightness of the subject.

Sports Mode (p.40)
Use Sports mode to shoot a moving subject. You can view the picture clearly with less shaking when played back later in still or slow mode. Press PROGRAM AE so that appears in the viewfinder and the display window. The aperture and shutter speed are automatically adjusted depending on the speed of the subject.

Aperture Priority Mode (p.41) AE A, A
Select the desired aperture, and the shutter speed is automatically set to maintain the appropriate exposure. Press PROGRAM AE so that AE A appears in the viewfinder (A in the display window). Select the aperture with the CONTROL dial.

Shutter Priority Mode (p.42) AE S, S
Select the desired shutter speed, and the aperture is automatically adjusted to maintain the appropriate exposure. Press PROGRAM AE so that AE S appears in the viewfinder (S in the display window). Select the desired shutter speed with the CONTROL dial.

To Lock the Manual Settings
Slide the AUTO LOCK switch down to HOLD. Then the IRIS, SHUTTER SPEED, GAIN and WHT BAL buttons and the CONTROL dial do not function.

About the previous settings
The lithium battery must be installed to temporarily save manual settings if you detach the battery. (The settings are saved for five minutes.)

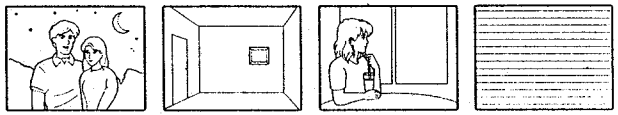
Notes on recording In Program AE/Manual modes
- We recommend that you adjust the focus and white balance manually.
- When recording under fluorescent, sodium, or mercury lamps, the recorded picture may flicker or colour of the picture may vary.

Shooting outdoors
We recommend that you slide the ND FILTER switch so that the ND ON appears in the viewfinder.

Focusing Manually

When to Use Manual Focus

Use manual focus under the following conditions.

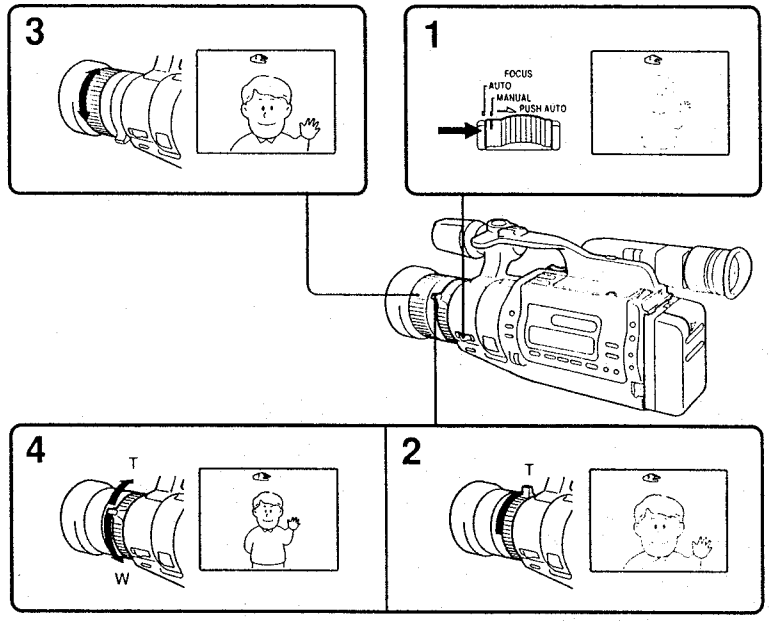


[a] [b] [c] [d]

- Insufficient light **[a]**
- Subjects with little contrast–walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length. (1) Set the FOCUS switch to MANUAL. The ☞ indicator appears in the viewfinder. (2) Turn the zoom lever up until the lever stops (telephoto position). (3) Turn the focus ring to adjust the focus. (4) Turn the zoom lever to set the desired shot length. You can use the power zoom button instead of the zoom lever.



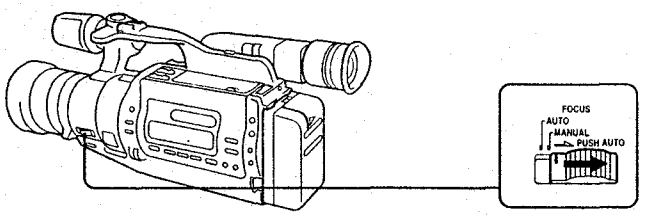
To Reactivate Auto Focusing

Set the FOCUS switch to AUTO. The ☞ indicator in the viewfinder disappears.

Focusing Manually

Shooting with Auto Focusing Momentarily

Push the FOCUS switch in the direction of the arrow (PUSH AUTO). The auto focus functions while you are pushing the FOCUS switch toward PUSH AUTO. When you release the switch, manual focusing resumes. Use this switch to focus on one subject to the other with smooth focusing.



Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Shooting a scene with lots of movement in bright light
Set the zoom lever fully to the wide-angle position.

Close-ups (Macro)
1 Set the FOCUS switch to MANUAL.
2 Turn the zoom lever down to the wide-angle position until it stops.
3 Turn the focus ring to adjust focus.

Adjusting the White Balance

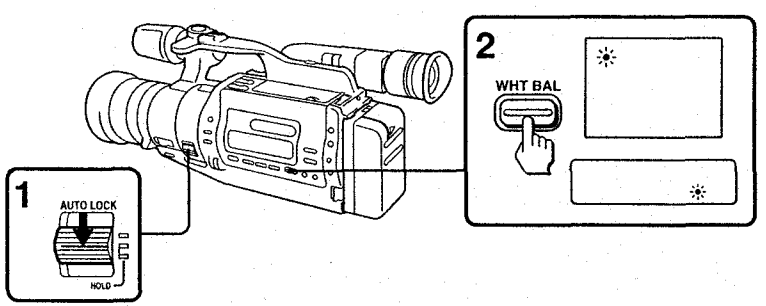
When to Adjust the White Balance Manually

White balance adjustment makes white subjects look white and gets more natural colour balance for camera recording. You can obtain better results by adjusting the white balance manually under the following conditions:

Conditions	White balance mode (Indicator inside the viewfinder)
Lighting conditions change quickly	(Indoor)
Conditions too bright, such as in photography studios	
Under sodium lamps	
Under mercury lamps	
Monochromatic subject or background	
Recording outdoors: e.g.neon signs, fireworks	(Outdoor)
Scenes after sunset or before sunrise	
Under a colour matching fluorescent lamp	

Adjusting the White Balance

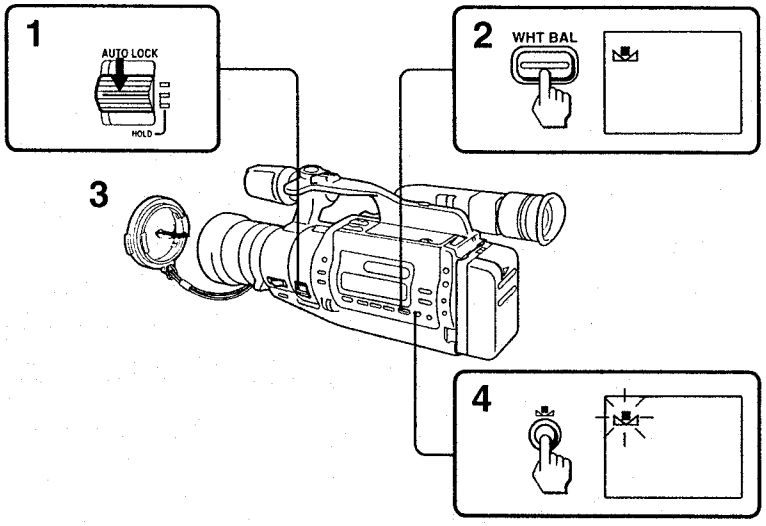
(1) Slide the AUTO LOCK switch down to the center position. (2) Press WHT BAL repeatedly to select the appropriate white balance mode. Each time you press the button, the mode (indicator inside the viewfinder) changes: Auto (no indicator) → One-push ( ) → Outdoor ( ) → Indoor ( ), cyclically.



To Return to Automatic White Balance Mode
Press WHT BAL until no indicator appears in the viewfinder or slide the AUTO LOCK switch up to green position.

Locking the White Balance Setting (One-Push White Balance Mode)

When you set the white balance to one-push white balance mode, the setting is locked and maintained even if lighting conditions change. You can achieve recording with natural colours without being affected by ambient light. (1) Slide the AUTO LOCK switch down to the center position. (2) Press WHT BAL repeatedly to display the indicator in the viewfinder. The indicator flashes slowly. (3) Attach the supplied white hood cap to the camcorder and point it at a subject (when shot outdoors) or to the light source (when shot indoors). (4) Press the button. The indicator flashes rapidly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing.



Notes on the indicator in the viewfinder

- The state of the indicator shows as follows:
  Slow flashing: White balance is not adjusted.
  Fast flashing: White balance is being adjusted after pressing the button.
  Lights up: White balance has been adjusted.
- When the indicator remains flashing even if you press the button, shoot in automatic white balance mode. Press WHT BAL until no indicator appears in the viewfinder.

Shooting when the lighting condition changes

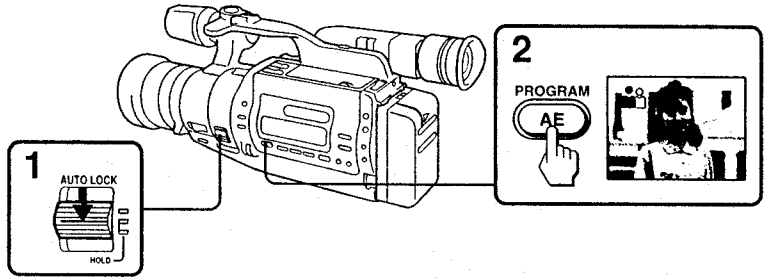
- When the lighting condition has changed, readjust the white balance with the button during recording standby mode. (This button does not function during recording.)
- When you adjust the aperture and shutter speed manually, and move from indoors to outdoors or vice-versa, slide the AUTO LOCK switch up (green position), then slide it down to the center position again.
- When you move from indoors to outdoors or vice-versa, or detach the battery for replacement while shooting in automatic white balance mode, point the camcorder to a white subject about 10 seconds before you start recording.

Using Portrait Mode

You can get a portrait effect, that is, the subject in focus and the background out of focus. The aperture and the shutter speed are automatically adjusted to maintain the appropriate exposure depending on the size and brightness of the subject. The portrait mode is effective when used in the following cases:

- A still subject, such as a person or flower
- Subject behind an obstacle, such as a net
- Zooming in on a subject in telephoto

(1) Slide the AUTO LOCK switch down to the center position. (2) Press PROGRAM AE repeatedly so that appears inside the viewfinder.

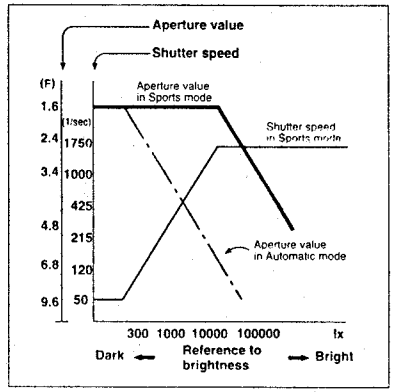


Hint for effective camera work

Using portrait mode, you can make the background go out of focus gradually while keeping the subject in focus. In portrait mode, slide the AUTO LOCK switch up to the topmost position and start recording. Then slide the AUTO LOCK switch down to the center position. The camcorder enters portrait mode.

Theory of the portrait mode

When shooting outdoors under bright sunlight in automatic mode, the aperture tends to close and both the subject and the background come into focus (deep depth of field). This is a result of excessive light. In order to bring the subject in focus and keep the background out of focus (shallow depth of field), the aperture should be opened. In portrait mode, the aperture is controlled to open by automatically adjusting the shutter speed (between 1/50 and 1/1750 depending on the shooting situation) to maintain the appropriate exposure.

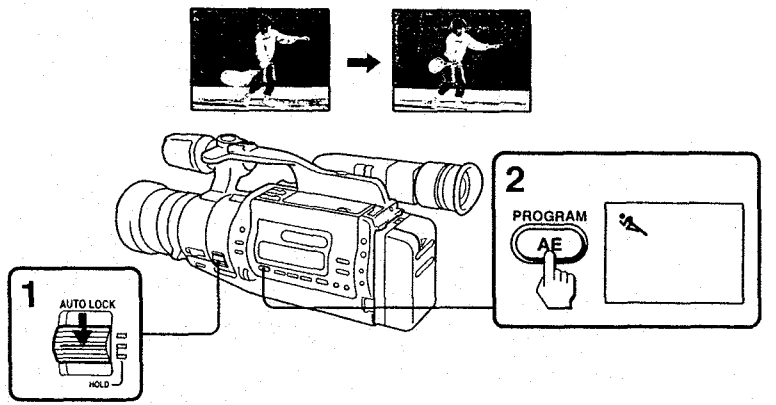


Using Sports Mode

You can record a subject with high-speed action and view the picture with less shaking when played back in still or slow mode. The shutter speed and the aperture are automatically adjusted to maintain the appropriate exposure depending on the speed of the subject. The sports mode is effective when used in the following cases:

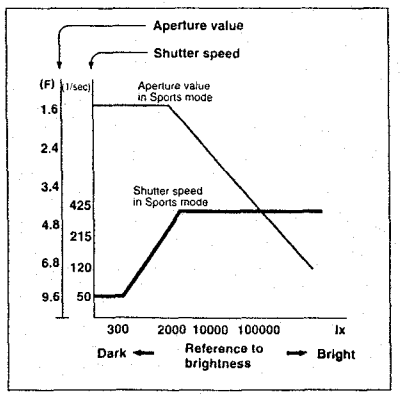
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape shot from a moving car

(1) Slide the AUTO LOCK switch down to the center position. (2) Press PROGRAM AE repeatedly so that the indicator appears inside the viewfinder.



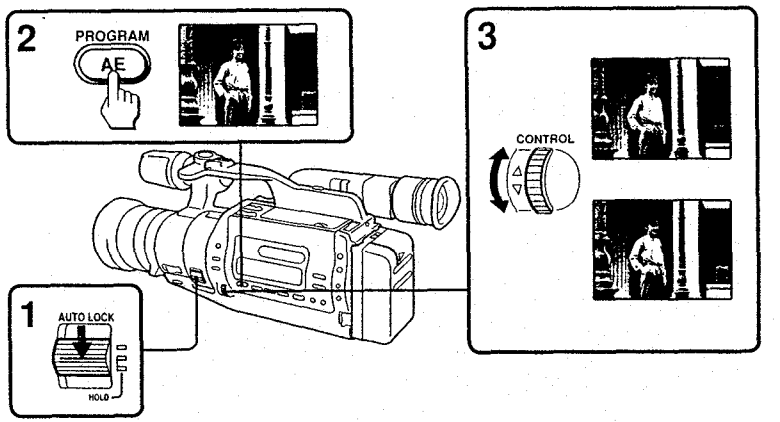
Theory of the sports mode

When you select a faster shutter speed, you can record high-speed action clearly compared with picture recorded in automatic mode. However, the picture may become dark when the lighting condition is insufficient. In sports mode, the faster shutter speed is controlled depending on the shooting situation (between 1/50 and 1/425) to maintain the appropriate exposure.



Using the Aperture Priority Mode

You can select the aperture to determine the desired depth of field. The shutter speed is automatically set (between 1/50 and 1/1750) in combination with the aperture value to maintain appropriate exposure. (1) Slide the AUTO LOCK switch down to the center position. (2) Press PROGRAM AE repeatedly so that AE A appears in the viewfinder. (3) Turn the CONTROL dial to select the desired aperture value. You can select from 12 values: F1.6, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11. For a smaller aperture, select a higher value. The shutter speed changes in accordance with the selected aperture value.



About the depth of field

The depth of field is the in-focus range, measured from the distance behind a subject to the distance in front. The depth of field can vary with the aperture value and the focal length. Lowering the F value (larger aperture) reduces the depth of field. Raising the F value (smaller aperture) provides a larger depth of field. Zooming in telephoto position offers a smaller depth of field while the depth of field in wide-angle position is greater.

Note on selection of the aperture

A flashing ► indicator in the viewfinder indicates insufficient or excessive lighting condition for the aperture priority mode. Although it is possible to record when this happens, we recommend resetting the aperture.

- Insufficient light (the picture in the viewfinder is dark).
  Select a lower value.
- Excessive light (the picture in the viewfinder is too bright).
  Select a higher value.

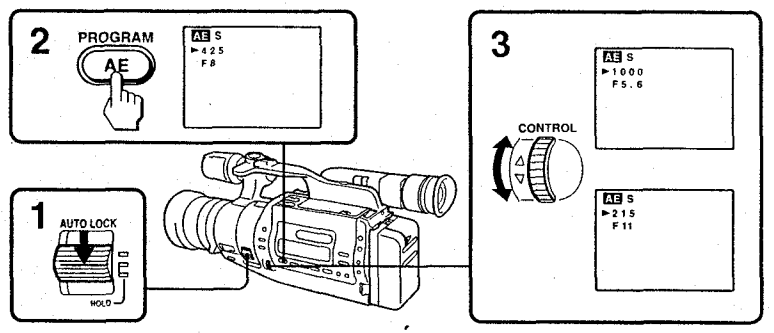
While the ► indicator is flashing, you cannot use the one-push white balance mode (p.38). Operate before adjusting with the CONTROL dial or select the value so that the indicator does not flash.

Using the Shutter Priority Mode

You can select the shutter speed from 16 speeds between 1/50 and 1/10000. When you select a faster shutter speed, movement appears clearer with less shaking when the tape is played back in still or slow mode. The aperture value is automatically adjusted according to the selected shutter speed to maintain appropriate exposure (between F1.6 and F11). This mode is most effective in the following cases:

- A golf swing or a tennis match in fine weather with the ball movement captured clearly.
- Playing back certain scenes with high-speed movements in clear, sharp pictures.

(1) Slide the AUTO LOCK switch down to the center position. (2) Press PROGRAM AE repeatedly so that AE S appears in the viewfinder. (3) Turn the CONTROL dial to select the desired shutter speed. You can select from 16 speeds: 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000. For a faster shutter speed, select a larger value indicator in the viewfinder. The aperture value changes in accordance with the selected shutter speed.



To Select the Best Shutter Speed

Example	Shutter speed
• A golf swing or tennis match in fine weather (to view the hit ball clearly in still picture mode, set to 1/1000 to 1/3500)	1/600, 1/1000
• A landscape shot from a moving car • A moving roller coaster in overcast days • An athletic scene, marathon, etc.	1/150 – 1/425
• Indoor sports • Replacement for the ND2 filter (to halve the exposure)	1/120
• In sunny weather (to avoid an out-of-focus picture due to a small aperture)	1/75 – 1/100

Shutter speed indicator in the viewfinder
For example, the 1/100 shutter speed is displayed as "100" in the viewfinder.

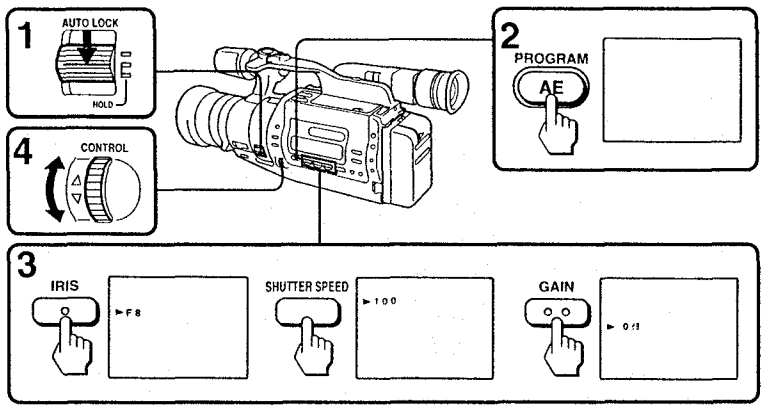
Note on selection of the shutter speed
A flashing ► indicator in the viewfinder indicates insufficient or excessive lighting condition for the shutter priority mode. Although it is possible to record when this happens, we recommend resetting the shutter speed with the CONTROL dial.

Shoot at the shutter speed of 1/215 or faster
We recommend shooting in sunlight or using a video light.

Note
When shooting a very bright subject, a vertical band (smear) may appear on the screen if the shutter speed is set too high.

Using Manual Mode

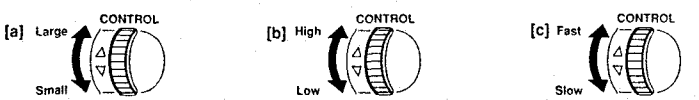
In manual mode, you can adjust the aperture, shutter speed and gain independently. (1) Slide the AUTO LOCK switch down to the center position. (2) If any of the PROGRAM AE indicators is displayed, press PROGRAM AE repeatedly so that no indicator appears in the viewfinder. (3) Press IRIS, SHUTTER SPEED or GAIN. (4) Turn the CONTROL dial to adjust the aperture, shutter speed or gain.



Adjusting the aperture
When you press IRIS, the aperture is locked at the value which was selected automatically at that time. You can now select the aperture manually from 12 values using the CONTROL dial: F1.6, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11. To open the aperture (larger aperture), select a lower value. **[a]**

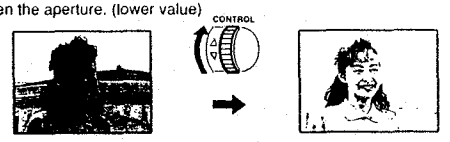
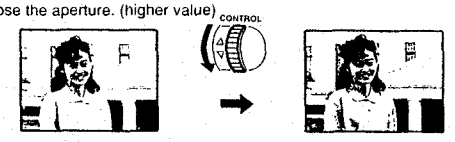
Adjusting the GAIN
When you press GAIN, the gain is locked at the level which was selected automatically at that time. If you adjusted the aperture manually prior to adjusting the gain, the gain level is set according to the aperture setting. You can now select the gain manually from 8 levels using the CONTROL dial: –3 dB, 0 dB, +3 dB, +6 dB, +9 dB, +12 dB, +15 dB, +18 dB.
To increase the gain to brighten the picture, select a higher level. **[b]**

Adjusting the shutter speed
When you press SHUTTER SPEED, the shutter speed is locked at the speed which was selected automatically at that time. When you press this button again, the speed is locked at 1/120. Subsequent press of the button locks the speed at 1/1000. You can now select from 16 speeds using the CONTROL dial: 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000.
To increase the shutter speed, select a smaller setting (larger value indicator in the viewfinder). **[c]**

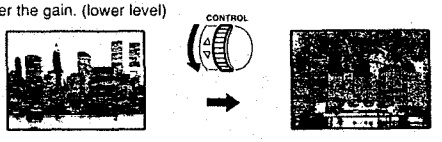
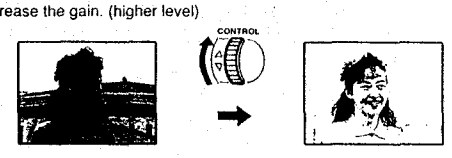


Note on the shutter speed
For quick access to the desired speed, first press SHUTTER SPEED to set to the 1/120 or 1/1000 shutter speed (whichever is closer to the desired speed), and then turn the CONTROL dial.

When to Adjust the Aperture

Conditions	Turn the CONTROL dial to:
When the background is too bright (backlighting)	Open the aperture. (lower value) 
When the subject is bright with dark background	Close the aperture. (higher value) 

When to Adjust the Gain

Conditions	Turn the CONTROL dial to:
When recording the darkness faithfully	Lower the gain. (lower level) 
When the background is too bright (backlighting)	Increase the gain. (higher level) 

Note on gain level
When you select a gain level that is too high, the picture may be distorted.

To Lock the Manual Settings
To prevent settings from being erased by an accidental pressing of a button, the aperture, gain, shutter speed and white balance can be locked at the levels you set. Sliding the AUTO LOCK switch down to HOLD will disable the IRIS, GAIN, SHUTTER SPEED and WHT BAL buttons and the CONTROL dial.

To Return to Automatic Adjustment Mode
Slide the AUTO LOCK switch up to the topmost position. All the items will be adjusted in automatic mode.

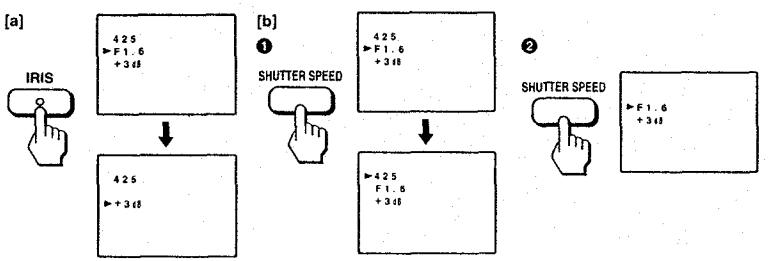
To Change the Setting
To change an item with the ► indicator in the viewfinder
Turn the CONTROL dial to change to the desired setting.

To change an item without the ► indicator in the viewfinder
(1) Press the button of the item to be changed. The ► indicator moves to that item. (2) Turn the CONTROL dial to change to the desired setting.

To Cancel the Setting
To cancel the setting of an item with the ► indicator in the viewfinder [a]
Press the button of the item to be cancelled. The indicator of the item disappears from the viewfinder.

To cancel the setting of an item without the ► indicator in the viewfinder [b]
❶ Press the button of the item to be cancelled. The ► indicator moves to that item. ❷ Press the same button again. The indicator of the item diappears from the viewfinder.

When the settings are cancelled:
- When the ND SHUTTER is set to AUTO in the menu system, the shutter speed is locked at the range from 1/50 to 1/215.
  When the ND SHUTTER is set to OFF, it is locked at 1/50.
- The automatic aperture mode is resumed.
- The automatic gain mode is resumed. If the aperture value is displayed in the viewfinder, the gain is set to the corresponding level for maintaining the appropriate exposure.



Advanced Applications of the Manual Mode

The manual mode features an advanced recording technique by controlling the exposure with a combination of adjustments of the shutter speed, aperture value and gain level.

Understanding the relationship between the exposure and the aperture, shutter speed and gain
Exposure is measured in EV (exposure value). The exposure value can be varied or maintained at a constant level by controlling the aperture, gain and shutter speed.
The variation of exposure in each item is as follows:

Item	Selectable steps	Variation of exposure	Brighter ↔ Darker (+EV) (–EV)
Aperture	12 steps	0.5EV/step	F1.6 ↔ F11
Shutter	16 steps	0.5EV/step	1/50 ↔ 1/10000
Gain	8 steps	0.5EV/step	+18 dB ↔ –3 dB

The relationship between the exposure and the aperture, shutter speed and gain is:

EV(Exposure value) = EV from aperture control + EV from shutter speed control + EV from gain control

Example: To create a desired picture without changing the exposure

You can make a desired recording by adjusting the aperture, shutter speed, and/or gain in manual mode.

1 **Slide the AUTO LOCK switch down to the center position.**

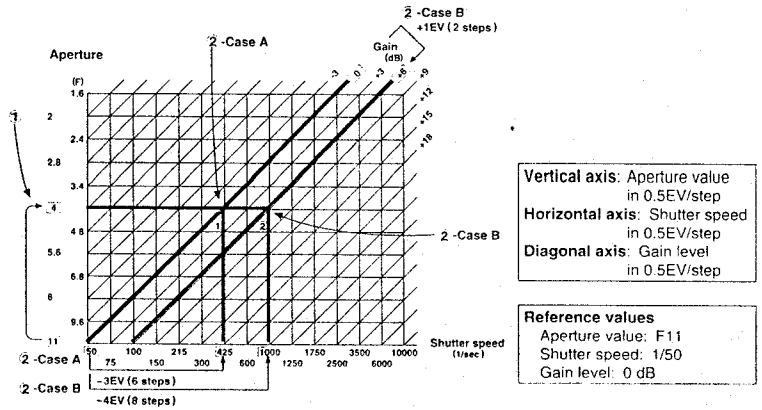
2 **Press PROGRAM AE repeatedly so that no indicator appears in the viewfinder (if any of the PROGRAM AE indicators is displayed).**

3 **Press IRIS and GAIN.**
The shutter speed is locked between 1/50 and 1/215. Suppose the aperture value is set to F11 and the gain level to 0 dB.
These settings are used as the reference to determine the exposure setting. The exposure value in this example is 0 EV.

0EV = EV from aperture control + EV from shutter speed control + EV from gain control

Even if any of the items is changed, the total exposure should be constant (in this example, 0 EV).

4 **Use the following graph to select the setting.**



Vertical axis: Aperture value in 0.5EV/step
Horizontal axis: Shutter speed in 0.5EV/step
Diagonal axis: Gain level in 0.5EV/step

Reference values
Aperture value: F11
Shutter speed: 1/50
Gain level: 0 dB

Example: Change the aperture value to F4 without changing the exposure

① **Press IRIS and use the CONTROL dial to set the aperture value to F4.**
When the aperture is changed from F11 to F4 (reducing the F value 6 steps), the exposure becomes +3 EV brighter.
To maintain total exposure at 0 EV by the combination of aperture, shutter speed, and gain, the EV from the shutter speed and gain control should be changed to get –3 EV.

② **Case A: To change only the shutter speed**
To reduce the exposure by –3 EV using the shutter speed, you should increase the speed 6 steps.
The following calculation shows that you need to change the speed from 1/50 to 1/425.

0 EV =	EV variation from Aperture control		EV variation from shutter speed control
	+ 3 EV	+	– 3 EV
	F11 to F4		1/50 to 1/425

Press SHUTTER SPEED twice and turn the CONTROL dial to set the shutter speed to 1/425.

Case B: To set the shutter speed to 1/1000 and change the gain level
When the shutter speed is changed from 1/50 to 1/1000, the EV from the shutter speed control changes to –4 EV. To maintain total exposure at 0 EV, +1EV (2 steps) should be added by increasing the gain level. The following calculation shows that you need to change the shutter speed from 1/50 to 1/1000 and the gain from 0 dB to +6 dB.

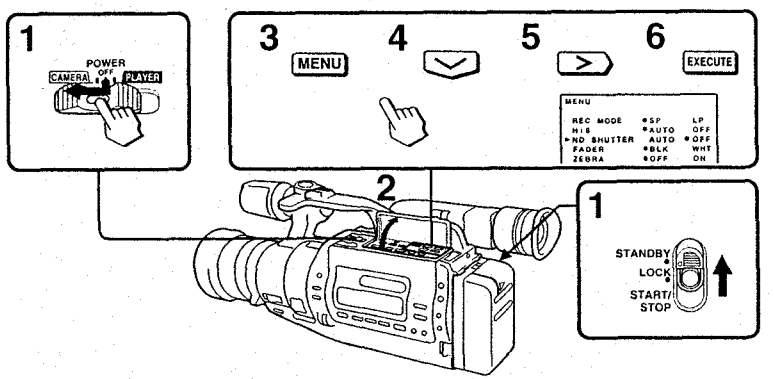
0 EV =	EV from aperture control		EV from shutter speed control		EV from gain control
	+ 3 EV	+	– 4 EV	+	+ 1 EV
	F11 to F4		1/50 to 1/1000		0 dB to + 6 dB

Press SHUTTER SPEED three times to set the shutter speed to 1/1000, and press GAIN and turn the CONTROL dial to set the gain level to +6 dB.

Notes
- When recording outdoors, the brightness of a subject may be affected by weather.
- When recording conditions change, we recommend that you reset each item.
- If you change the setting of the ND FILTER switch, the exposure changes.

Using an Optional ND (Neutral Density) Filter

The ND shutter feature allows the camcorder to maintain optimum exposure by adjusting the shutter speed automatically between 1/50 and 1/215. Under bright conditions, which disables automatic adjustment of the ND shutter feature, the picture may go out of focus or foreign objects, such as dust on the lens, may be recorded when you use a larger aperture setting. To prevent this, we recommend that you slide the ND FILTER switch in the direction of the arrow so that the ND ON indicator appears in the viewfinder. The internal ND filter is set and reduces the amount of incident light to one-tenth. To remove the ND filter, slide the switch again to turn off the ND ON indicator.
When you use the optional ND filter, we recommend that you set ND SHUTTER to OFF in the menu system to disable the ND shutter feature. (1) Set the camcorder to recording standby mode. (2) Open the lid of the control panel. (3) Press MENU to display the menu. (4) Press ∨ to move the cursor ▶ to ND SHUTTER. (5) Press > to move • to OFF. (6) Press EXECUTE.

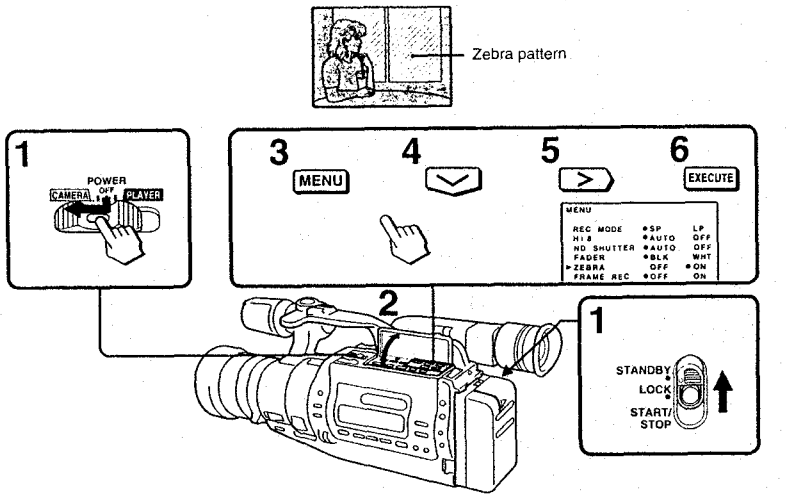


Note on the ND FILTER switch
When you are shooting in manual adjustment mode, the ND ON/ND OFF indicator does not appear in the viewfinder. Use the ND FILTER switch as you like, according to shooting conditions. When outdoors, we recommend that you slide the switch so that ND ON appears in the viewfinder. Indoors slide it to that turn off the ND ON indicator from the viewfinder.

Shooting under fluorescent lamp with ND SHUTTER AUTO mode
The fluorescent lamp may look coloured in the playback picture. To avoid this, set ND SHUTTER mode to OFF in the menu system.

Adjusting Using the Zebra Pattern

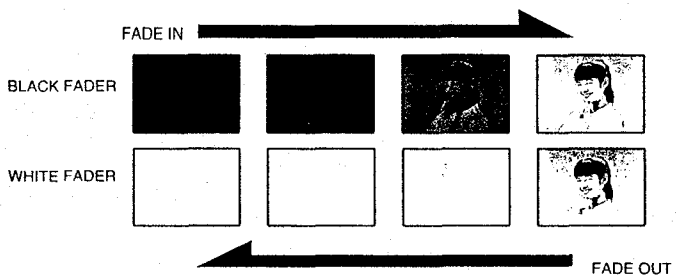
You can set the camcorder to display a zebra pattern (diagonal stripes) in the portion of the picture in the viewfinder with a subject whose brightness exceeds a certain level. The portion of the picture where zebra pattern appears is an area of high brightness and overexposure. You can check the picture level of a subject by displaying the zebra pattern. Use the zebra pattern as a guide for adjusting the aperture, shutter speed, and gain so that you can get the desired picture.
Before you start recording, set ZEBRA to ON using the menu system. (1) Set the camcorder to recording standby mode. (2) Open the lid of the control panel. (3) Press MENU. (4) Press ∨ to move the cursor ▶ to ZEBRA. (5) Press > to move • and select ON. (6) Press EXECUTE.

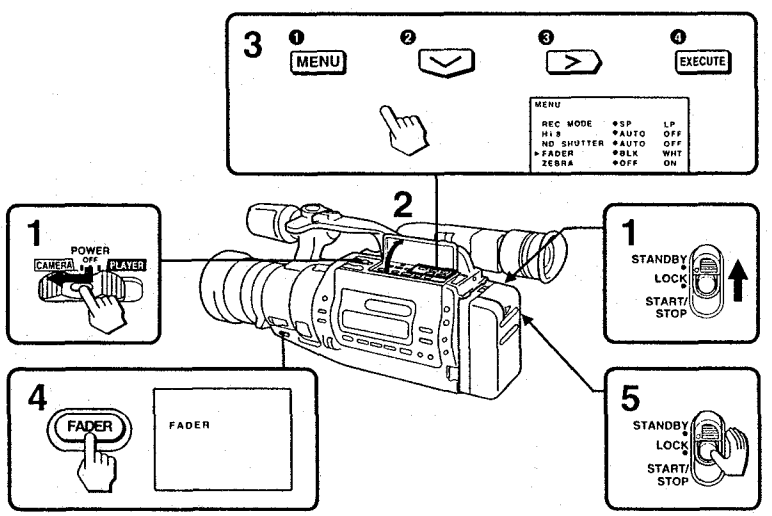


Note on shooting with a title
Even if you find the zebra pattern displayed on the title, the zebra pattern is not recorded.

Fade-in and Fade-out

You can fade the picture and sound in or out to give your recording a professional touch. When fading-in, you can make the picture gradually appear from black or white while increasing the sound. When fading-out, you can make the picture gradually fade to black or white while decreasing the sound. You can select the type of fade (black or white) in the menu system before you start to record. (1) Set the camcorder to recording standby mode. (2) Open the lid of the control panel. (3) Set the FADER mode to BLK (black fade) or WHT (white fade) in the menu system (p.30). (4) Press FADER. The FADER indicator appears. When fading-in, press FADER after sliding the STANDBY switch up to set the camcorder to standby mode. When fading-out, press it while recording. (5) Press START/STOP. When fading-in, the recording starts fading in. When fading-out, the picture fades out and the recording stops.





To Cancel the Fade-in/fade-out Function

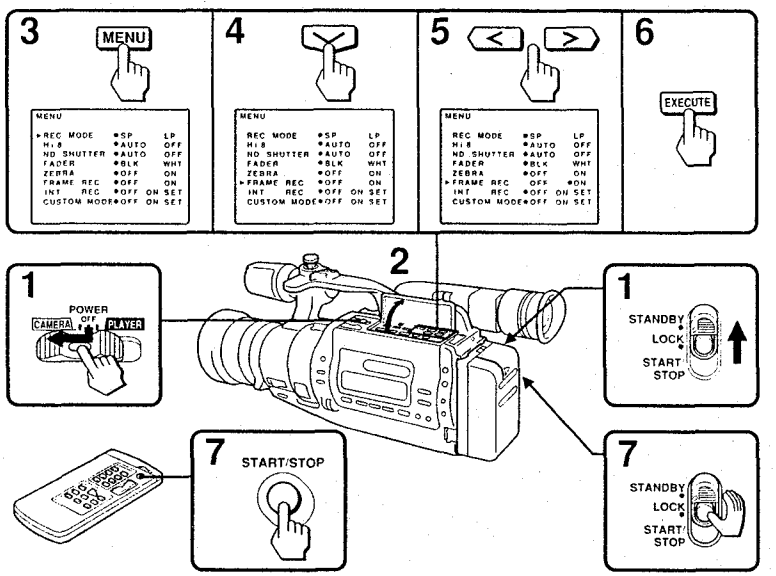
Before pressing START/STOP, press FADER so that the FADER indicator disappears from the viewfinder.

Notes

- The date or time does not fade in or out.
- You can make the title fade in or out. (p.56)
- If you want to use the fade-in/fade-out function repeatedly, start from step 1 each time.

Making the Frame Recording

You can make a recording with an animated effect using frame recording. In frame recording, the camcorder records approx. four frames of a subject and then stops. To create an animated effect, you can then move the subject and then repeat frame recording. Secure the camcorder and use the Remote Commander for effective frame recording. Push REMOTE COMMANDER on the camcorder so that the remote sensor pops up. Before you start recording, set FRAME REC mode to ON in the menu system. (1) Set the camcorder to recording standby mode. (2) Open the lid of the control panel. (3) Press MENU to display the menu. (4) Press ∨ to move the cursor ► and select FRAME REC. (5) Press < or > to move • and select ON. (6) Press EXECUTE. The setting is stored in memory and the menu disappears. (7) Press START/STOP on the camcorder or the Commander. The camcorder performs a recording of approximately 4 frames, then enters recording standby mode. (8) Move the subject and repeat step 7.



To cancel the frame recording, you

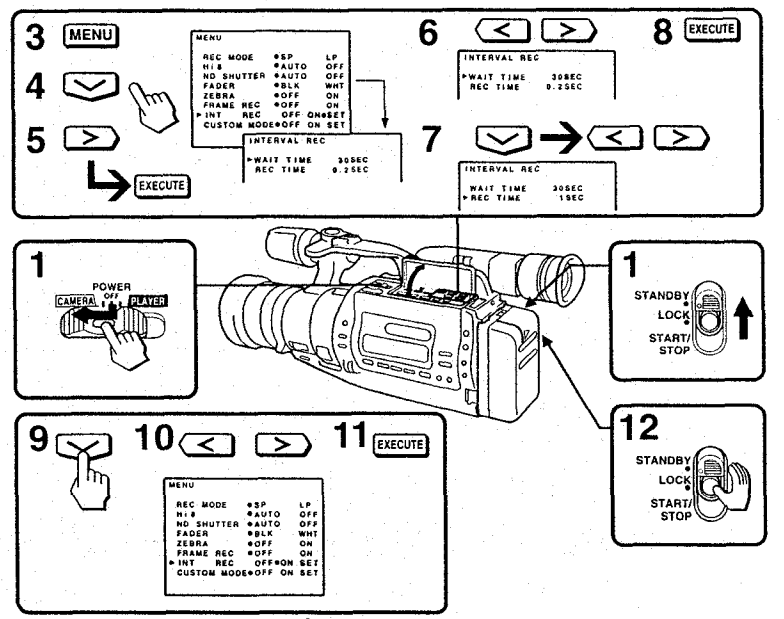
- select FRAME REC OFF in the menu.
- slide the STANDBY switch down to cover START/STOP.
- slide the POWER switch to OFF or PLAYER.
- detach the power source.

Note on frame recording using a prerecorded tape

Two frames of a prerecorded tape immediately after frame recording are completed are erased.

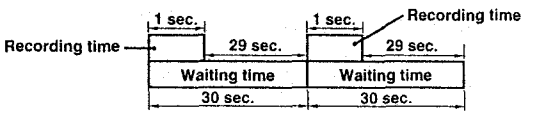
Interval Recording

You can make a time-lapse recording by setting the camcorder to automatically record and standby sequentially. You can achieve an excellent Hi8 recording for flowering, emergence, etc. with this function.
Before you start recording, set the desired recording time and standby (waiting) time in the menu system.
(1) Set the camcorder to recording standby mode. (2) Open the lid of the control panel. (3) Press MENU. (4) Press v to select INT REC. (5) Press > to select SET and press EXECUTE. The INTERVAL REC setting menu appears. (6) Press < or > repeatedly so that the desired WAIT TIME (standby period) appears. The time changes: 30 sec→1 min→5 min→10 min. (7) Press v to move the cursor ▶ to REC TIME and select the desired time with < or > as in step 6. The recording time changes: 0.2 sec→0.5 sec→1 sec→2 sec. (8) Press EXECUTE. (9) Press v to select INT REC. (10) Press < or > to select ON. (11) Press EXECUTE. The setting is stored in memory and the menu disappears. (12) Press START/STOP. Recording and standby repeat until the tape reaches the end.



To Make Interval Recording Precisely

When you select 30 sec. for waiting time and 1 sec. for a recording time, for example, recording repeats for 1 second at the intervals of 29 seconds.



To Stop Interval Recording before the Tape Ends

Press START/STOP.

To cancel the interval recording, you

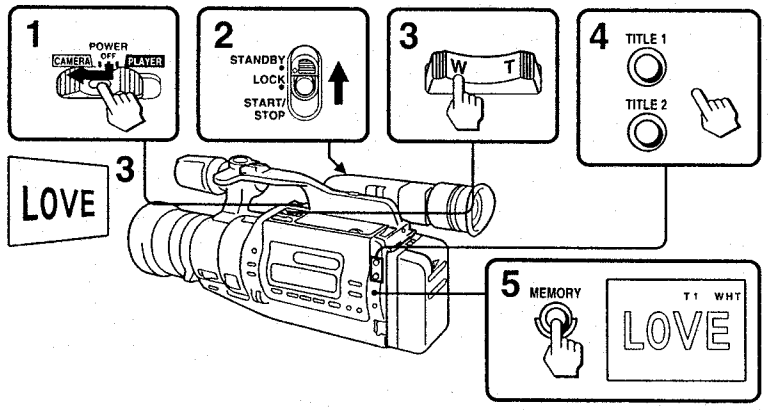
- select INT REC OFF or SET in the menu.
- slide the STANDBY switch down to cover START/STOP.
- slide the POWER switch to OFF or PLAYER.
- detach the power source.

Superimposing a Title

You can superimpose your own handwritten message or graphics over the picture during camera recording, playback or editing.

Storing a Title

You can store up to two titles. Before you store the title, first make a title card. Use a plain, white card and write the title with a dark-coloured marker in thick letters. You can also use any available graphics or signs if they are thick enough and have contrast. When lighting conditions are too bright and the title cannot be viewed clearly in the viewfinder, adjust the brightness to a little darker. Before you begin, make sure that the lithium battery is installed. (1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Slide the STANDBY switch up. (3) Point the camcorder at the title card and adjust the focus. (4) Press TITLE 1 or TITLE 2. (5) Press MEMORY. The title is stored in the button you pressed in step 4.



To Check the Title

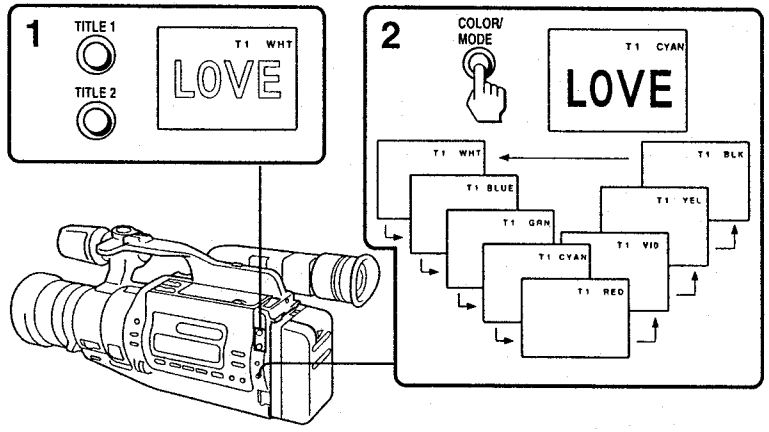
Press TITLE 1 or TITLE 2 (whichever you pressed in step 4) in standby mode. To erase the title from the viewfinder, press the same button again.

Note on shooting a title

When a cassette is inserted, the camcorder turns off automatically after five minutes. If more than five minutes are necessary to store the title, take the cassette out.

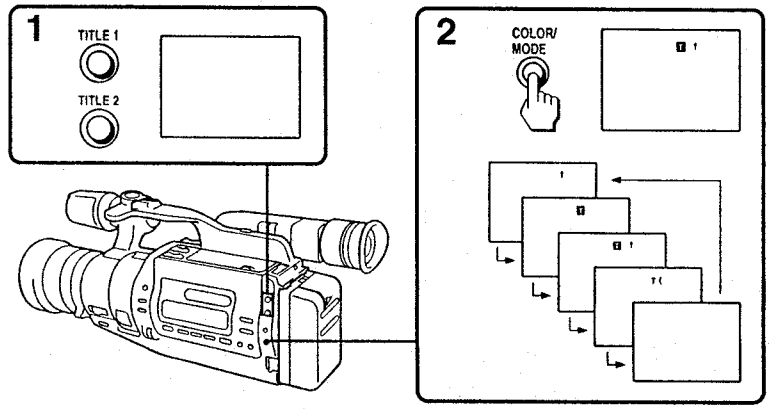
Selecting the Colour of the Title

When the title is displayed in the viewfinder, you can change the title colour by pressing COLOR/MODE. (1) If the title is not displayed in the viewfinder, press TITLE 1 (or TITLE 2) to display the title. (2) Press COLOR/MODE and select the title colour. Each time you press the button, the colour indicator changes: WHT(white)→BLUE→GRN(green)→CYAN→RED→VIO(violet)→ YEL(yellow)→BLK(black), cyclically.



Selecting the Display Mode of the Title

You can scroll up, reverse and fade-in or fade-out your title. When the title is not displayed in the viewfinder, you can select the display mode by pressing COLOR/MODE. (1) If the title is displayed in the viewfinder, press TITLE 1 (or TITLE 2) to erase the title. (2) Press COLOR/MODE and select the desired display mode. Each time you press the button, the mode indicator changes: ↑ (scrolling) → T (reverse)→ T↑ (scrolling a reversed title)→ T< (fade-in/fade-out)→ no indicator (normal display).



Various Display Modes

You can also display two titles at the same time with one title layered on the other (p.57). When you select scrolling mode, the title scrolls up and stops at the center.

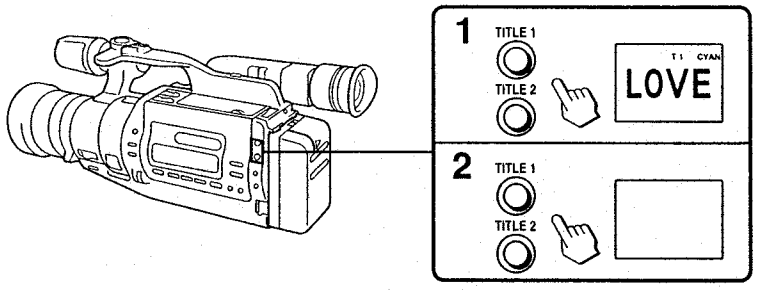
Display mode (Indicator inside the viewfinder)	
Normal display mode (no indicator)	1 title 2 titles
Scrolling up the title (↑)	1 title 2 titles
Reversing the title with the picture (T)	1 title 2 titles
Scrolling up the reversed title (T↑)	1 title 2 titles
Fade-in or fade-out the title (T<)	1 title FADE OUT FADE IN 2 titles FADE OUT FADE IN

To Check the Display Mode

Press TITLE 1 (or TITLE 2). Press the same button again to erase the mode indicator.

Superimposing a Title

When you superimpose a title, the colour and display mode indicators inside the viewfinder are not recorded. Before superimposing the title, store it (p.54). (1) During recording or playback, press TITLE 1 or TITLE 2 at the point you want to insert the title. The title appears. When you select scrolling or reversed title scrolling mode, the title scrolls up and stops at the center. (2) Press TITLE 1 or TITLE 2 at the point you want to turn off the title. The title goes out. In scrolling mode, it scrolls up and disappears.



To Superimpose Two Titles at a Time

You can record with one stored title positioned over the other stored title.

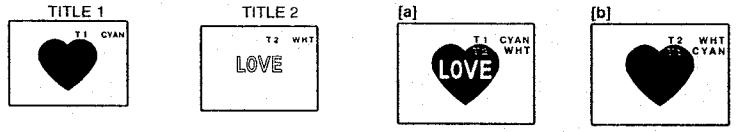
To put TITLE 2 over TITLE 1 [a]

In step 1 above, hold down TITLE 1 and press TITLE 2.

To put TITLE 1 over TITLE 2 [b]

Hold down TITLE 2 and press TITLE 1.

To turn off the titles, press either TITLE 1 or TITLE 2.



To Superimpose a Title at the Beginning

1 Set the camcorder to standby mode.
2 Press TITLE 1 or TITLE 2.
3 Press START/STOP to start recording with the title displayed inside the viewfinder.
4 At the point you want to turn off the title, press TITLE 1 or TITLE 2.

Superimposing with the scrolling mode

If you do not want a title to stop at the center, press TITLE 1 (or TITLE 2) twice at the point you want to insert the title.

About the Title Colour

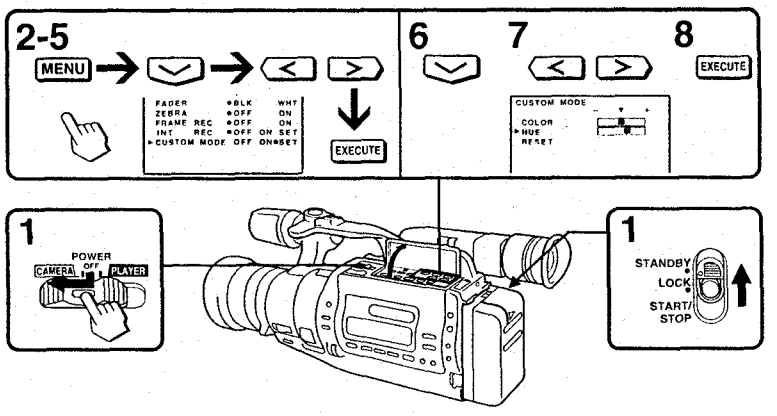
You can change the title colour even after displaying the title in the viewfinder by pressing COLOR/MODE. When displaying two titles, you can change the colour of the title displayed on the upside. To change the colour of the title displayed on the downside, erase the title once, then display the title on the downside and change the colour.

Note on scrolling and fade-in/fade-out mode

You cannot use these display modes in still, frame-by-frame or slow playback modes.

Recording with Custom Preset Function

You can preset the camcorder to record the picture with the desired colour and hue. Adjust the camcorder, if necessary, after making several trial recordings.
When presetting, adjust the picture by shooting a subject and checking the picture displayed on a TV using the menu system. For connecting a TV, see pages 22 and 23. Press DISPLAY to display the menu on the TV.
(1) Set the camcorder to recording standby mode. (2) Press MENU. (3) Press ∨ to move the cursor ► to CUSTOM MODE. (4) Press < or > to move • to SET. (5) Press EXECUTE. The CUSTOM MODE menu appears. (6) Press ∨ to move ► to the item you want to adjust. If ► is set to RESET, press ∨ once to move the cursor to the top. (7) Press < or > to adjust the picture while shooting a subject and monitoring it on the TV. You can select three steps each from the standard position. (8) Make sure that the cursor is not set to RESET and press EXECUTE. The CUSTOM MODE menu disappears and the settings are stored in memory.



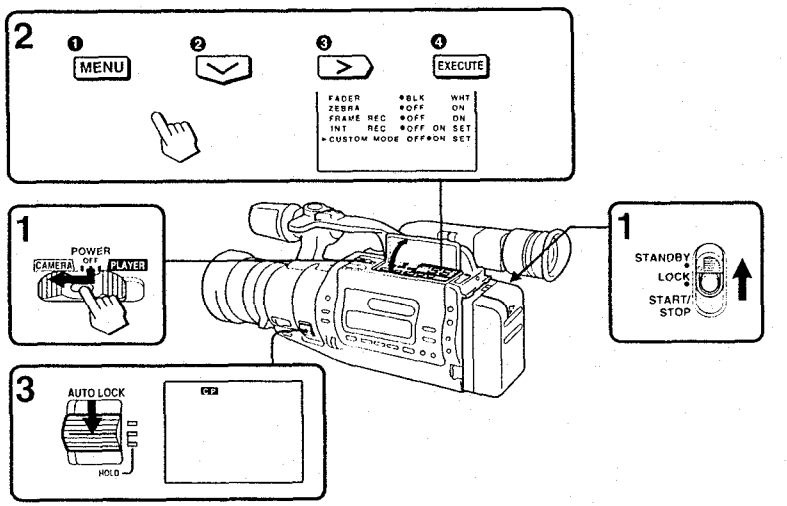
Items for setting

Item	Function	← – ▼ + →
COLOR	To adjust the colour intensity	Lighter ⟷ Darker
HUE	To adjust the hue	Purplish ⟷ Greenish

Note on adjustment of each item
Make sure to shoot the appropriate subject to the item you want to preset.

Recording with the Custom Preset Function

(1) Set the camcorder to recording standby mode. (2) Set CUSTOM MODE to ON in the menu system. (3) Slide the AUTO LOCK switch down to the center position. The CP indicator appears in the viewfinder.



About the previous setting
When you slide the AUTO LOCK switch up to the green position after recording, the CP indicator disappears, but the setting is retained.

To Return to the Standard Setting
Display the CUSTOM MODE menu and move the cursor ► to RESET and press EXECUTE. The CUSTOM MODE menu disappears. All of the items will return to the standard position.

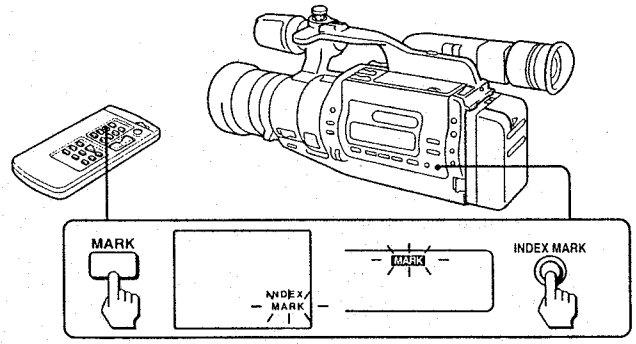
Using the Index Function

You can locate the beginning of a desired programme easily by marking an index signal during recording or playback and searching for it later.

Marking an Index Signal

You can mark an index signal during recording or playback.
You can also mark it with the Remote Commander. Push REMOTE COMMANDER on the camcorder so that the remote sensor pops up.

To mark an index signal at the beginning of recording or playback
Press INDEX MARK on the camcorder or the Commander in recording standby or playback standby mode. The INDEX MARK indicator appears in the viewfinder with the MARK indicator flashing. The MARK indicator flashes in the display window. When recording or playback starts, the MARK indicator stops flashing. This shows that the index signal is being marked. The INDEX MARK indicator will then disappear.



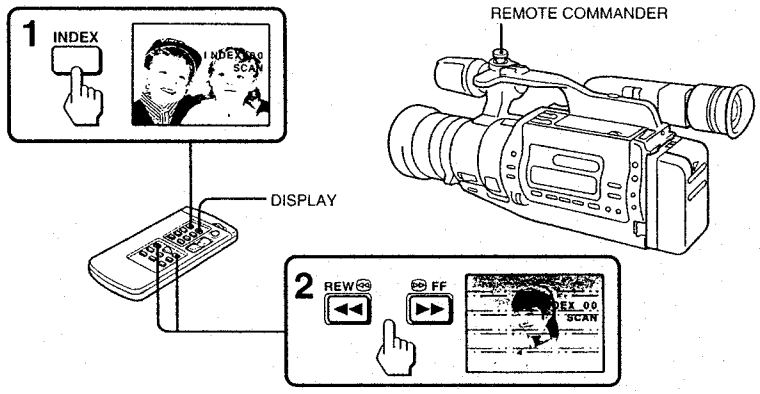
To mark an index signal during recording or playback
Press INDEX MARK on the camcorder or the Commander at the point you want to locate later.

Notes
- Make sure you mark index signals at more than two-minute intervals. If you mark them at less than within two-minute intervals, you may not be able to search for them correctly.
- While the index signal is being marked (the INDEX MARK indicator lights in the viewfinder), do not stop recording. If you do, the search may not be completed correctly.
- If you mark an index signal on the tape with the data code recorded, the data code will be erased at the point on which the index signal is marked. When playing back this tape, the camcorder keeps displaying the data code immediately before the erased one. If the data code does not exist for more than 30 seconds, the data code displays bars (– – – –).

Note on the tape on which an index signal cannot be marked
You cannot mark an index signal on a tape with the red mark on the cassette exposed.

Scanning the Beginning of Each Programme While Monitoring the Playback Picture—Index Scan (1)

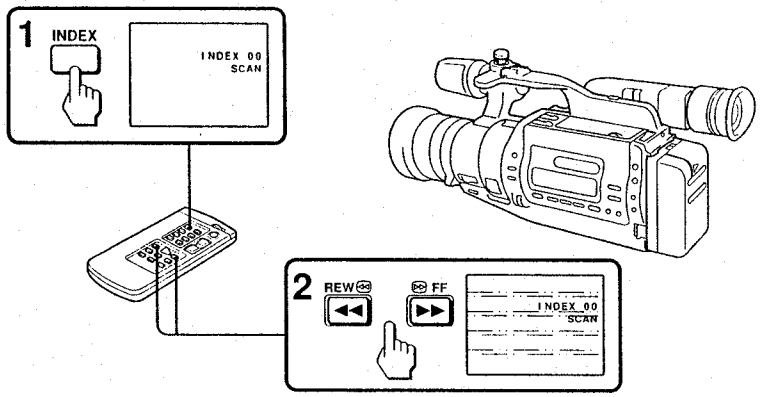
Use the Remote Commander. To view the picture on a TV, press DISPLAY. (1) Press INDEX on the Commander during normal playback or playback pause mode. (2) Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which the index signal was marked. If you want to continue playback, press ▷. When you do not press any button, the tape is automatically scanned to the next programme.



To Cancel Index Scan Mode
Press ▷. Normal playback resumes.

Scanning the Beginning of Each Programme in Sequence—Index Scan (2)

(1) Press INDEX on the Commander during stop mode. (2) Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which an index signal was marked. (3) Press ▷ when the desired programme starts playback.

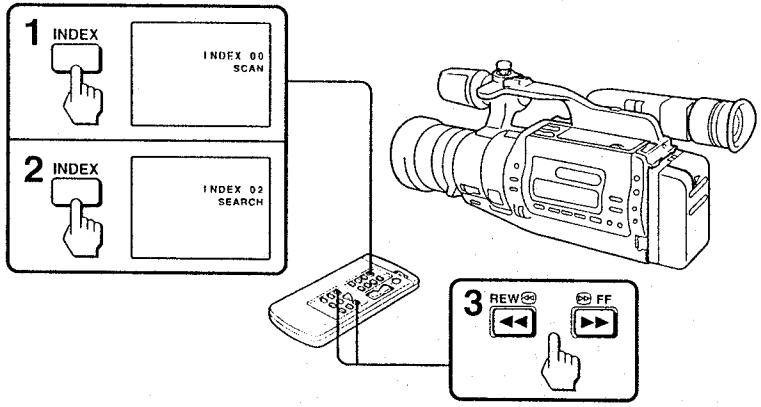


To Cancel Index Scan Mode

Press ▷. Normal playback resumes.

Locating the Desired Programme—Index Search

(1) Press INDEX on the Commander during stop or playback mode. (2) Press INDEX repeatedly until the index number of the desired programme is displayed in the viewfinder. (3) Press ◀◀ or ▶▶. Playback starts from the beginning of the desired programme.



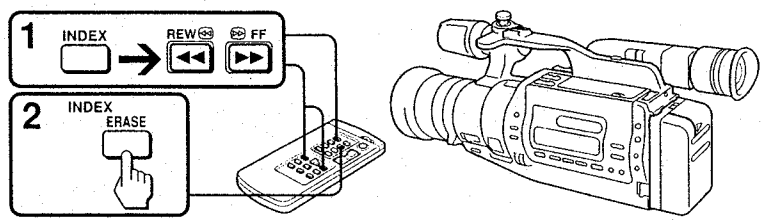
To Stop Index Search Mode

Press ▷. Normal playback resumes.

Using the Index Function

Erasing the Index Signal

(1) Locate the index signal to be erased using the index scan or index search function. (p.61 – 63) (2) Press INDEX ERASE on the Commander within 2 to 10 seconds while the desired programme plays back. After the index signal is erased, the camcorder returns to index scan or index search mode, whichever was used in step 1.



Notes on erasing

- Press ERASE more than 2 seconds after the playback of the desired programme begins.
- You cannot erase the index signal on a tape on which the red mark on the cassette is exposed.
- While the index signal is being erased, the sound cannot be heard and a black band appears at the bottom of the picture. This will not affect the recorded sound or picture.
- The camcorder can detect index signals marked with VTRs, but cannot erase them. VTRs with a index function can detect index signals marked with this camcorder but cannot erase them.
- An index signal may be erased when making PCM after recording in the portion where the index signal is marked.

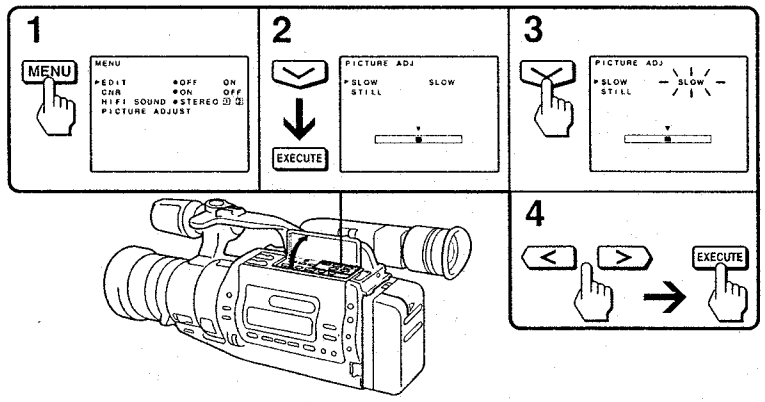
Note on RC time code and data code

When an index signal is erased, the RC time code and data code on the same portion of the tape is also erased. Bars (–––) appear when the portion is played back. To use that tape for editing using an editing controller, rewrite the RC time code (p.68).

Adjusting the Playback Picture

Adjusting a Still or Slow Picture

You can adjust the playback picture when noise bands appear at the top or bottom of the picture during slow mode or when vertical shaking occurs during still mode. First display the menu in the viewfinder or on the TV screen. (1) Press MENU. (2) Press ∨ to move the cursor ▶ to PICTURE ADJUST and press EXECUTE. The PICTURE ADJUST menu appears. (3) Press ∨ to move the cursor ▶ to the item you want to adjust ("SLOW" or "STILL"). (4) Keep pressing < or > until you get the best picture quality. (5) Press EXECUTE to store the setting and exit the menu.

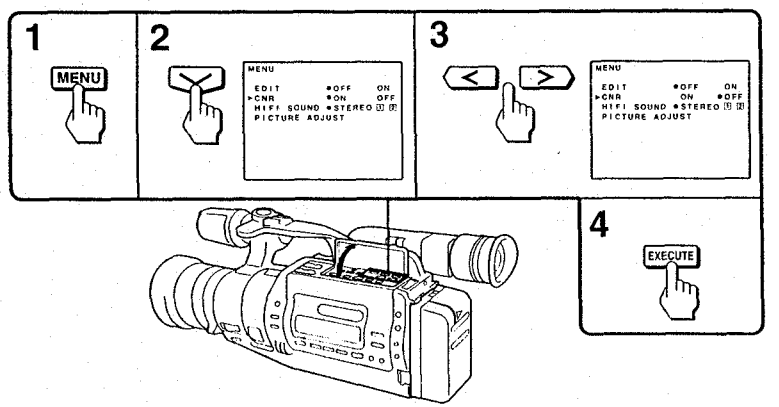


Note

When the tape recorded in LP mode is played back, STILL adjustment of the PICTURE ADJUST menu does not function as the still picture is automatically adjusted to minimize the vertical shaking.

Reducing Colour Noise on Playback Picture

The camcorder incorporates Chroma Noise Reduction (CNR) to minimize colour noise or irregular colours generated when playing back the tape. This function activates when CNR mode is set to ON in the menu system (it is preset to ON at the factory). However, "colour lag" may occur when some pictures are played back with CNR mode turned on. ("Colour lag" means remainings of colour for moving subjects.) Set CNR mode to OFF if you want to erase colour lag even though colour noise is not reduced. (1) Press MENU. (2) Press v to move the cursor ► to CNR. (3) Press < or > to move • to OFF. (4) Press EXECUTE to store the setting and exit the menu.



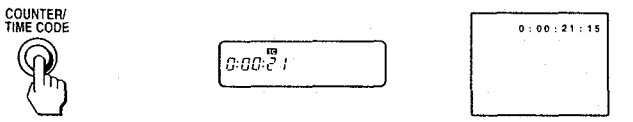
Notes on Chroma Noise Reduction (CNR)
Even if you set CNR to ON, this function activates only when you
- press ▷.
- press ▷ and then >/II►.
- press the + (forward direction) side of EDITSEARCH in the PLAYER mode.

Using the RC Time Code

The RC time code indicates the absolute position of a tape with hour, minute, second and frame. The code is automatically recorded during camera recording, and can be displayed in the viewfinder, the display window and the TV screen during playback. You can easily locate a desired programme as an accurate tape counter.

Displaying the RC Time Code during Playback

Press COUNTER/TIME CODE. The RC time code appears in the viewfinder and the display window. The frame numbers are not displayed in the display window. You can also display the RC time code during recording by pressing COUNTER/TIME CODE.



To Display the RC Time Code on the TV Screen
Press DISPLAY.

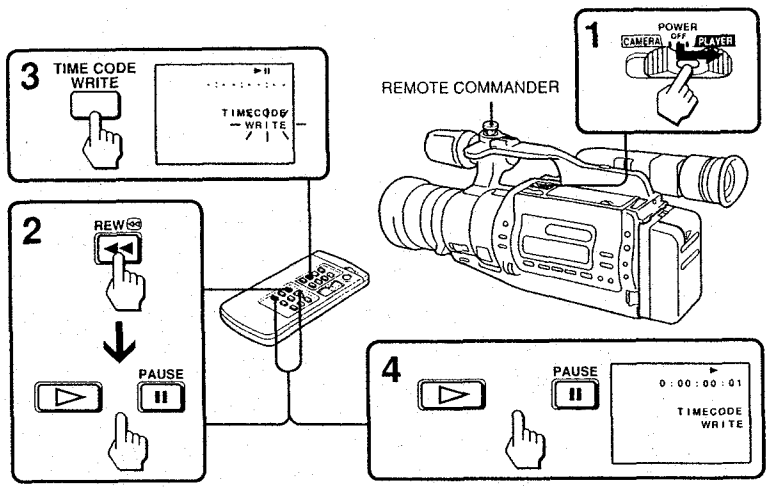
Use of RC time code for editing
Before you start editing, write the time code from the beginning to the end of the tape. Note that the data code of that tape is erased.

Notes on the RC time code displayed
Bars (----) appear in place of the RC time code when you play back:
- a blank portion of the tape.
- a tape in which the RC time code is illegible because of tape damage or noise.
- a tape recorded with a video camera recorder which does not have the RC time code function.
- the portion of a tape where the RC time code was erased together with the index signal.

Using the RC Time Code

Writing the RC Time Code on a Prerecorded Tape

You can write the RC time code on a prerecorded tape. Use the Remote Commander. (1) While pressing the small green button on the POWER switch, slide it to PLAYER. (2) Rewind the tape to the beginning and set the camcorder to playback pause mode. (3) Press TIME CODE WRITE on the Remote Commander. The TIME CODE WRITE indicator appears in the viewfinder with WRITE flashing. (4) Press ▷ or II to start playback. The WRITE indicator stops flashing and the RC time code writing starts from 0:00:00:00.



To Stop Writing the RC Time Code
Press □ (or any tape transport button).

To Write the RC Time Code from the End of the RC Time Code Prerecorded Portion
Rewind the tape to the portion on which the RC time code has been written and set the camcorder to playback pause mode. Then follow steps 3 and 4 above. The RC time code is written continuously.

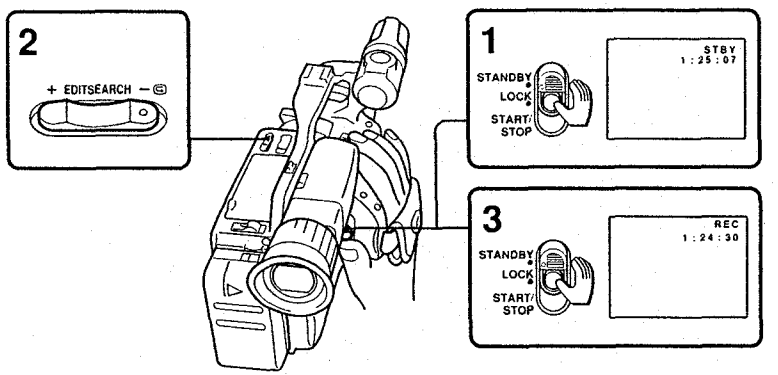
Canceling RC time code writing
The RC time code writing stops when:
- you press TIME CODE WRITE again before starting playback
- you press INDEX before starting playback
- you change from playback mode to another mode

Note on writing the RC time code
When you are writing the RC time code from the middle of a tape without the time code written, writing starts several frames before the current picture.

Re-recording a Picture

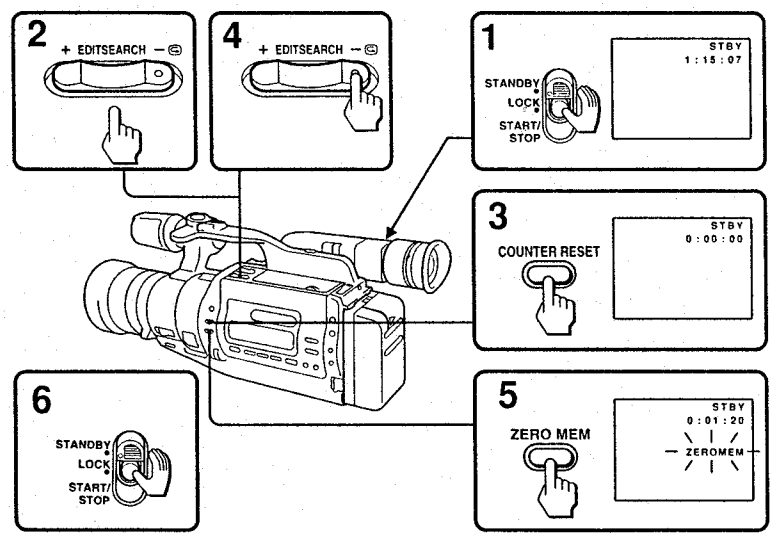
Re-recording on a Previously Recorded Portion—EDIT SEARCH (1)

During recording, you can review your last recorded portion in the viewfinder and re-record over it using EDITSEARCH. (1) Press START/STOP to set the camcorder to recording standby mode. (2) Keep pressing the + (forward playback) or – (reverse playback) side of EDITSEARCH and release the button when you locate the beginning of the portion you want to record over. The camcorder enters standby mode again. (3) Press START/STOP to begin re-recording. As long as you do not eject the tape, the transition between the scenes will be smooth.



Re-recording a Picture in the Middle of a Recorded Tape—Insert Recording

You can insert a scene in the middle of a recorded tape by setting the starting and ending points. The previous recorded portion will be erased. If the TC indicator is displayed in the viewfinder, press COUNTER/TIME CODE to erase it and display the tape counter. (1) Press START/STOP to set the camcorder to recording standby mode. (2) Keep pressing the + (forward playback) or – (reverse playback) side of EDITSEARCH, and release the button where you want to end the insertion. The camcorder enters standby mode again. (3) Press COUNTER RESET. The counter resets to zero. (4) Keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion. (5) Press ZERO MEM. The ZERO MEM indicator flashes and the ending point is stored in memory. (6) Press START/STOP. Insert recording begins. The insert recording stops automatically at the counter zero point.



To Change the End Point

Press ZERO MEM to erase the ZERO MEM indicator, then repeat steps 2 to 5.

Note

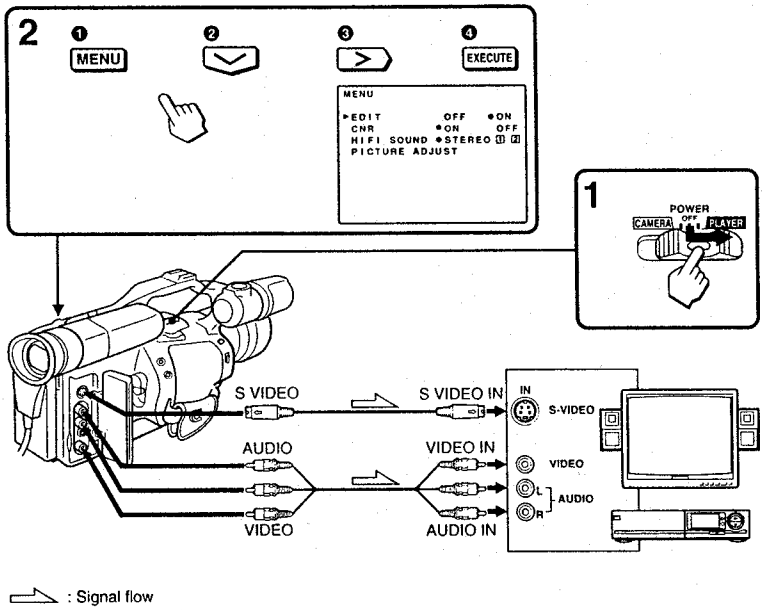
The picture may be distorted at the end of the inserted portion when it is played back.

Editing onto Another Tape

You can create your own video programme by editing with any other 8 mm, Hi8, Betamax, VHS, S-VHS, VHSC or S-VHSC VTR that has video/audio inputs.

Before Editing

We recommend that you use power from the AC outlet using the AC power adaptor. Connect the camcorder to your VTR using the supplied connecting cable. If your TV has the 21-pin connector (EUROCONNECTOR), use the supplied 21-pin connector (p.22).Set the TV/VTR selector on the TV to VTR and set the input selector on the VTR to LINE. (1) While pressing the small green button on the POWER switch, slide the POWER switch to PLAYER. (2) Set EDIT mode to ON in the menu system (p.30).



: Signal flow

If your TV or VTR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or VTR.
If you are connecting the camcorder using the S video connecting cable, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Editing onto Another Tape

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the recording VTR and the recorded tape into the camcorder. (2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. (3) Set the recording VTR to recording pause mode. (4) Press II on the camcorder and VTR simultaneously to start editing. (5) If the portion you want to eliminate is played back, set the VTR to recording pause mode again. Then repeat steps 2 and 4.

To Stop Editing

Press □ on the camcorder and VTR. When you finish editing, reset EDIT mode to OFF(p.71).

Use of the EDITSEARCH button

To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause mode. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY so that they will not be superimposed on the edited tape.

Note on the data code and RC time code

The data code and RC time code recorded with the camcorder are not output from the S VIDEO connector or VIDEO jack. You can only record the data code that is displayed in the viewfinder or TV screen by pressing DISPLAY.

Additional Information

Usable Cassettes and Recording/Playback Modes

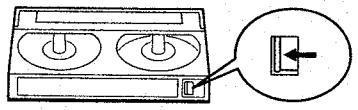
Selecting Cassette Types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. You can use Hi8 video and standard 8 mm cassettes. To record in the Hi8 system, you must use Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in the standard 8 mm system.
If you want to use a Hi8 cassette with the standard 8 mm recording system, set the Hi8 mode to OFF in the menu system before recording (p.30).

To play back in	Record using cassette type	Set Hi8 setting to
Hi8	Hi8	AUTO
standard 8 mm	Hi8	OFF
	8	AUTO (or OFF)

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark.



If you try to record with the red mark exposed, ⊠ and ≙ flash in the viewfinder, which indicate you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

When You Play Back

The camcorder automatically select the playback mode according to the recording system (Hi8/standard 8 mm, SP/LP mode) in which you recorded the tape.

To Play Back a Dual Soundtrack Tape

To monitor the desired sound, set HIFI SOUND to 1 or 2 in the menu system.(p.30)
When you finish playing back the dual soundtrack tape, reset HIFI SOUND mode to STEREO.

Notes on AFM Hi-Fi stereo

When you play back a tape, the sound is in monaural if:
- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

SP (Standard play)/LP (Long play) mode

When you play back a tape, the SP/LP indicator in the viewfinder shows the recording mode SP/LP.

PCM recording and playback

This camcorder cannot perform PCM recording or playback. When after-recording on the PCM recorded tape with this camcorder, sound may not be heard even when played back with the VTR with PCM function. In this case, set the AUDIO MONITOR switch on the VTR to STANDARD.

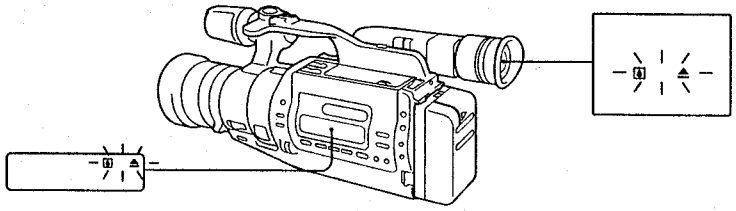
Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When [] and ⏏ flash in the viewfinder and the display window, this indicates that moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.
If [] does not light up when you turn on the power, you can use the camcorder again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, ⏏ flashes in the viewfinder and the display window. If this happens, none of the functions except cassette ejection will work.
Eject the tape and let it sit for about 1 hour.
If ⏏ does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

On the Lens

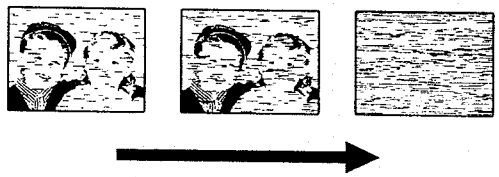
No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.
1 Be sure to tightly seal the plastic bag containing the camcorder.
2 Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



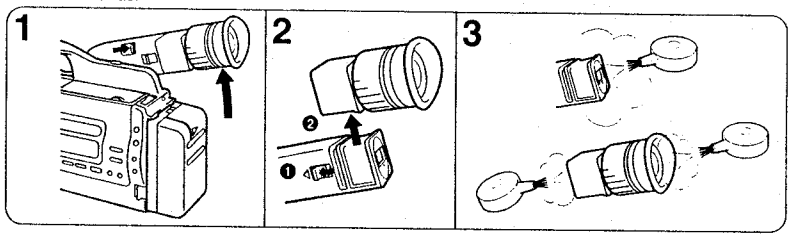
[a] Slight contamination
[b] Critical contamination
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Removing Dust from Inside the Viewfinder

(1) While sliding the viewfinder lock RELEASE knob in the direction of the arrow, lift up the viewfinder.
(2) Detach the eyecup while sliding the viewfinder eject knob in the direction of the arrow. (3) Clean the surface of the viewfinder and of the eyecup with a commercially available blower for a still camera. If dust still remains, use a cotton swab.



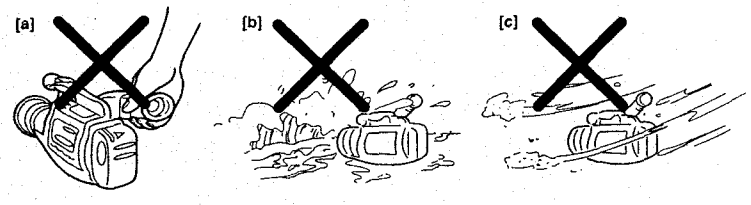
To Reattach the Eyecup

Push in the eyecup until it clicks.

Precautions

On Operation

- Operate the camcorder using 7.2 V (battery pack), or 6.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- You cannot use the AC-V25 AC power adaptor (not supplied) with this camcorder.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Do not pick up the camcorder by the viewfinder. **[a]**
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. **[b]**
- Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. **[c]**



On Handling Tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in.

On Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder casing with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent that may damage the finish.

Using Your Camcorder Abroad

Each country has its own electricity and TV colour systems. Before using your camcorder abroad, check the following points:

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. If you cannot attach the power adaptor to the wall outlet, use a power cord plug adaptor (not supplied).

Difference in Colour Systems

This camcorder is a PAL system-based camcorder. If you want to view the playback picture on a TV, it must be a PAL system-based TV or a SECAM system-based TV with PAL-SECAM transcoder. Check the following alphabetical list.

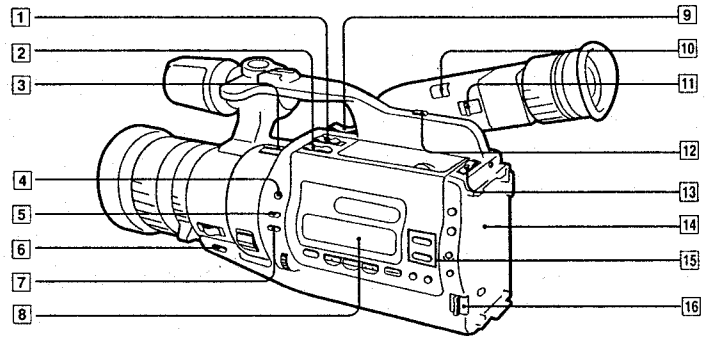
PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL M system country
Brazil

PAL N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.



1 POWER switch (p.16, 24)
CAMERA: for camera recording
PLAYER: for playing back or editing tape
OFF: power off

2 EDITSEARCH button (p.21, 69)
Press this button to check the recorded scene in the viewfinder in recording standby mode.
+ side: to view the forward playback picture
– side: to view the reverse playback picture

3 ND FILTER switch (p.18, 48)
Slide this switch if the ND ON indicator flashes in the viewfinder. The filter activates to reduce brightness.
To deactivate the filter, slide it again so that the indicator disappears.

4 COUNTER/TIME CODE button (p.26, 67)
Press to display the tape counter or the RC time code.

5 COUNTER RESET button (p.26, 70)
Press to reset the tape counter to zero.

6 FADER button (p.50)
Press this button to fade a picture in when you start recording, or to fade it out when you finish recording.

7 ZERO MEM (memory) button (p.26, 70)
Press to store the counter zero point of the tape in memory.

8 Display window (p.89)
Displays operating information such as the clock or the tape counter.

9 Power zoom button (p.19)
Press to change the size of the subject in the scene.
T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)

10 (Viewfinder lock) RELEASE knob (p.15, 75)
To lift up the viewfinder, slide this knob in the direction of the arrow.

11 Viewfinder eject knob (p.75)
To detach the eyecup for cleaning the surface of screen, slide it in the direction of the arrow.

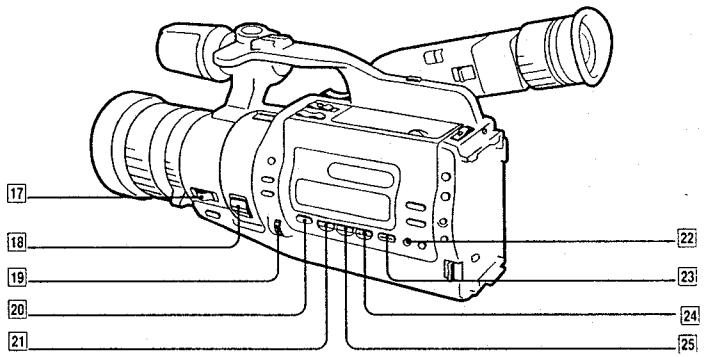
12 (Viewfinder) SLIDE button (p.17)
Press to slide the viewfinder if your nose touches the battery pack.

13 EJECT (cassette eject) knob (p.13)
Slide to open the cassette compartment.

14 Battery mounting surface (p.8)
Attach the battery pack to this surface.

15 DATE(+) and TIME(NEXT) buttons (p.12, 27)
Press to set the clock, to display or to turn off the date and time in the viewfinder. When setting the date and time, press DATE(+) button to advance numbers and press TIME(NEXT) button to set the next factor.

16 BATT (battery eject) knob (p.8)
To detach the battery pack, slide it in the direction of the arrow.



17 FOCUS switch (p.16, 35)
Slide this switch to AUTO to adjust the focus automaticaly and to MANUAL to adjust the focus manually. When shooting in manual focus mode, you can switch to automatic focusing while you hold to slide the switch to PUSH AUTO.

18 AUTO LOCK switch (p.31)
When you set this switch to the topmost (green) position, the camcorder adjusts the aperture, shutter speed (between 1/50 and 1/215), gain and white balance automatically. When you slide it down to the center position, you can adjust the aperture, shutter speed, gain and white balance manually. You can also use the PROGRAM AE function. To retain the settings you adjust manually, slide it down to HOLD.

19 CONTROL dial (p.31, 43)
To adjust the aperture, shutter speed and gain level manually, press IRIS, SHUTTER SPEED and GAIN, respectively, and turn this dial to obtain the desired value.

20 PROGRAM AE button (p.32)
Press to select from four PROGRAM AE modes (Portrait/Sports/Aperture Priority/Shutter Priority mode) and manual adjustment mode, to fit the shooting situation.

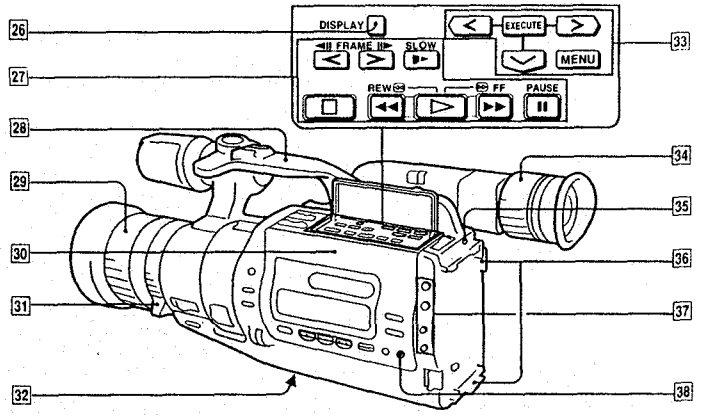
21 IRIS button (p.43)
When you press this button, the aperture is locked at the actual aperture value. To adjust the aperture manually, press this button and select the desired value with the CONTROL dial as follows:
Upward: to open the aperture
Downward: to close the aperture

22 (One-push white balance) button (p.38)
Press to adjust the white balance and maintain that condition after setting the white balance mode to .

23 WHT BAL (white balance) button (p.37)
Press to adjust the white balance manually. Each time you press this button, the white balance mode changes to Automatic (no indicator in the viewfinder), One-push adjustment (), Outdoors (•) and Indoors (⁚), cyclically.

24 GAIN button (p.43)
When you press it, the gain is locked at the actual level. If you adjust the aperture manually first, the gain is locked at the level depending on the adjusted aperture value. To adjust the gain manually, press this button and select the desired level with the CONTROL dial as follows:
Upward: to increase the gain
Downward: to decrease the gain

25 SHUTTER SPEED button (p.43)
When you press this button, the shutter speed is locked at the actual speed between 1/50 and 1/215. Continue to press the button to change the shutter speed to 1/120, 1/1000 and Auto (between 1/50 and 1/215). To adjust the shutter speed manually, press this button and select the desired speed with the CONTROL dial as follows:
Upward: to get a higher speed
Downward: to get a slower speed



26 DISPLAY button (p.24)
Press to display the viewfinder screen indicators on the TV when you connect the camcorder to a TV.

27 Tape transport buttons (p.24, 25)
□ STOP
◀◀ REW (rewind)
▷ PLAY (playback)
▶▶ FF (fast-forward)
II PAUSE
< ◀II/II▶ > FRAME (direction select/frame-by-frame)
▮▸ SLOW (slow speed playback)

28 Carrying handle

29 Focus ring (p.35)
Turn to focus the subject manually.

30 Cassette compartment (p.13)

31 Zoom lever (p.35)
Turn to change the size of the subject in the scene manually. Turn it upward for telephoto and downward for wide-angle.

32 Tripod receptacle (p.15)
Attach a tripod (not supplied) here.
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is shorter than 6.5 mm (9/32 inches). Otherwise, the screw might damege the inner part of the camcorder.

33 Menu operation buttons (p.30)
MENU: Press to display the menu in the viewfinder.
v: Press to select the desired item.
</>: Press to set the mode of the selected item.
EXECUTE: Press to store the settings.

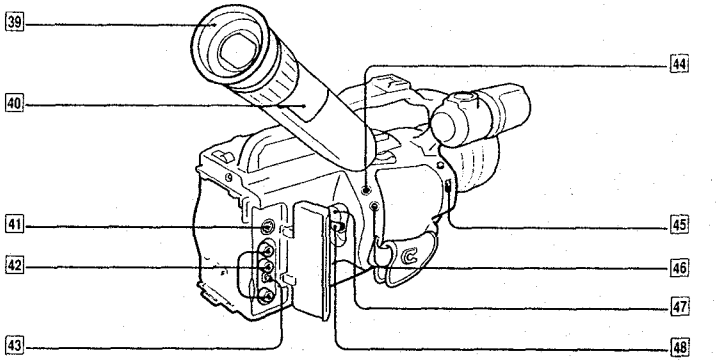
34 Viewfinder lens adjustment ring (p.14)
To focus the viewfinder lens, turn this ring until the indicator in the viewfinder comes into sharp focus.

35 Camera recording/battery lamp (p.16, 88)
This red lamp lights up during camera recording. When it flashes, the battery is dead.

36 Hooks for shoulder strap (p.84)
Attach the shoulder strap (supplied) here.

37 SUPERIMPOSE buttons (p.54–57)
Use to superimpose a title over the scene.
TITLE 1 and TITLE 2 buttons: Press to insert or turn off the title. You can store a title to each button.
MEMORY: Press to store a title.
COLOR/MODE: Press to select the colour of the title while the title is displayed in the viewfinder.
Press to select the display mode of the title while the title is not displayed.

38 INDEX MARK button (p.60)
Press to mark an index signal. If you mark it at the beginning of each programme, you can easily locate the desired one later.



39 Eyecup (p.15)
Place your eye against it. You can also view the picture without touching your eye against it.

40 Viewfinder (p.15)
You can monitor the picture in monochrome being recorded or played back. For details on the indicators in the viewfinder, see page 89.

41 S VIDEO jack (4-pin mini-DIN connector) (p.22, 71)
You can get a clearer picture if your TV or VTR has an S video jack. Connect to this jack using the supplied S video connecting cable. To view the recorded picture on the TV or to record onto another tape, connect this jack and the S video input jack on the TV or VTR.

42 VIDEO/AUDIO jacks (p.22, 71)
To view the recorded picture on the TV or to record onto another tape, connect these jacks and the VIDEO/AUDIO input jacks on the TV or VCR using the supplied A/V connecting cable.

43 RFU DC OUT (RFU adaptor DC output) jack (p.22)
To view the recorded picture on a TV that has only an aerial input, connect an appropriate RFU adaptor (not supplied) here.

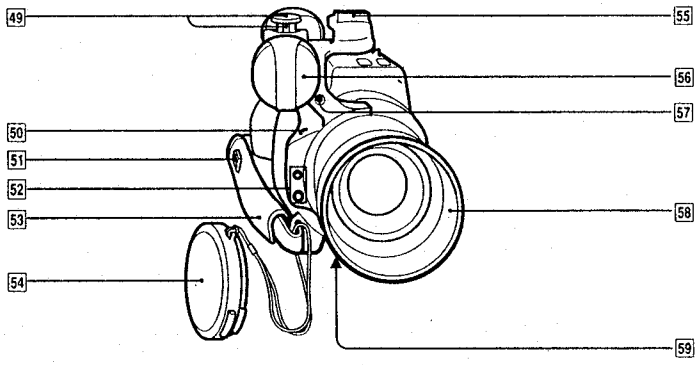
44 REMOTE ⇳ (LANC) control jack
Connect the LANC ⇳ connecting cable to a wired remote control unit such as a editing controller. In this case, you cannot use the supplied Remote Commander.
⇳ stands for Local Application Control Bus System. The ⇳ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

45 BUILT-IN MIC selector (p.20)
Usually set to the green position. Set it to WIND to reduce wind noise. When you use an external microphone (not supplied), set it to the green position as the selector does not function.

46 Ω (headphones) jack (stereo) (p.17)
Connect headphones (not supplied) to monitor the sound while viewing the playback or the recording picture.

47 STANDBY switch (p.16)
Slide this switch up until it snaps into STANDBY to set the camcorder to recording standby mode.

48 START/STOP button (p.16)
To start recording, press this button after setting the POWER switch to CAMERA and slide the STANDBY switch up. To stop recording, press it again.



49 REMOTE COMMANDER ON (□)/OFF (▭) switch and remote sensor (p.84)
When you use the Remote Commander, press this switch lightly so the remote sensor pops. Aim the Remote Commander here for remote control.

50 REC START/STOP button (p.15)
Use to start or stop recording for low-position recording.

51 Cap holder (p.16)
When you remove the hood cap, hook it here.

52 DC OUT (microphone power output) and MIC jacks (p.20)
Connect an optional external microphone (stereo or monaural). If the microphone has two plugs, connect to both jacks. If you connect a "plug-in-power" microphone, use the MIC jack only.

53 Grip strap (p.15)
Put your hand through the grip strap to hold the camcorder. Adjust the length of the strap so that your thumb can easily touch the START/STOP button.

54 Hood cap (p.16)
To remove it, squeeze the tabs at both sides. Hook the hood cap to the cap holder on the grip strap.

55 Accessory shoe
Attach a video light, external microphone, etc. here.

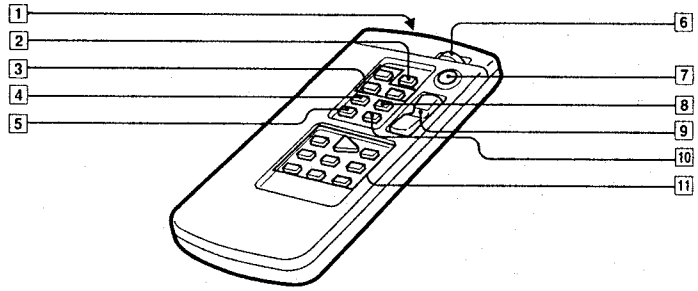
56 Built-in microphone (stereo)

57 Camera recording/battery lamp (p.16, 88)
This red lamp lights up during camera recording. When it flashes, the battery is dead.

58 Lens hood

59 Lithium battery compartment (bottom) (p.11)
Insert a lithium battery here to activate the clock and keep titles in memory.

Wireless Remote Commander



1 Transmitter
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 DISPLAY button

3 INDEX buttons (p.60–64)
INDEX: Press to scan or search for the desired programme on the tape on which index signals were marked.
INDEX MARK: Press to mark an index signal.
INDEX ERASE: Press to erase the index signal.

4 TIME CODE WRITE button (p.68)
To write the RC time code on a prerecorded tape, set the camcorder to playback pause mode, press this button and press ▷ or ❚❚.

5 COUNTER RESET button

6 HOLD switch
Slide this switch in the direction of the arrow to prevent the buttons from being accidentally pressed.
Before using this Remote Commander, slide in the direction opposite the arrow.

7 START/STOP button

8 DATA CODE button (p.27)
To display the recording date or time in the viewfinder during playback, press this button. Each time you press it, the display changes to the date, time and no indicator, cyclically.

9 Power zoom button

10 ZERO MEM button

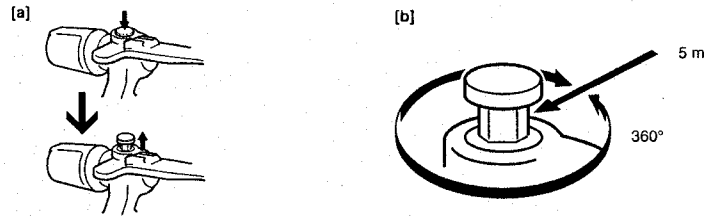
11 Tape transport buttons ×2 (p.25)
Other buttons function the same as those on the camcorder.

Identifying the Parts

Using the Remote Commander

Press REMOTE COMMANDER on the camcorder lightly. The remote sensor pops up. **[a]**
Press it again so that the remote sensor pops down when not in use.

Remote Control Direction [b]

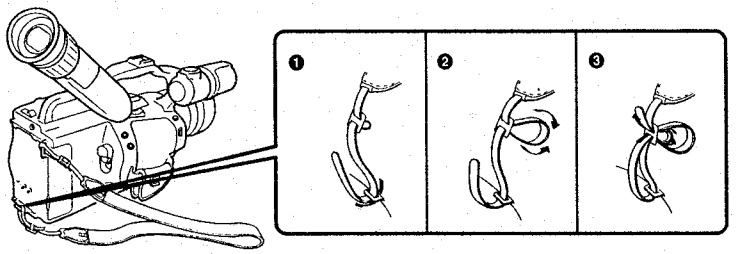


Note on the remote control direction
The camcorder may not be operated with the Remote Commander if the remote sensor is hidden by a part of the camcorder body.

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there are no obstacles between the remote sensor and Remote Commander.
- This camcorder works at commander mode VTR2. The commander modes (1,2 and 3) are used to distinguish this camcorder from other Sony VTRs to avoid remote control misoperation. If you use another Sony VTR at commander mode VTR2, we recommend that you change the commander mode or cover the remote sensor of the VTR with black paper.

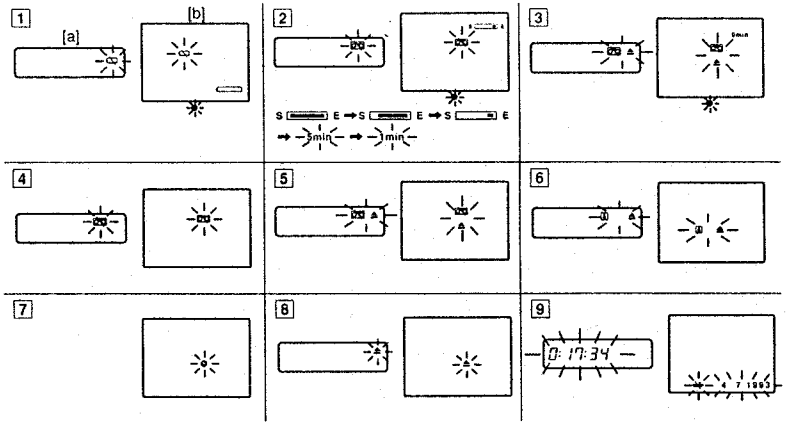
Attaching the Shoulder Strap



Indicators in the Display Window and the Viewfinder

Warning Indicators

If indicators flash in the display window [a] or the viewfinder [b], or a caution lamp on the camcorder flashes, check the following:



[1] Battery Remaining
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

[2] The tape is near the end.

[3] The tape has run out.

[4] No tape has been inserted.

[5] The tab on the tape is out (red) (p.73).

[6] Moisture condensation has occurred (p.74).
- When the cassette is not inserted, the ⏏ indicator does not appear.

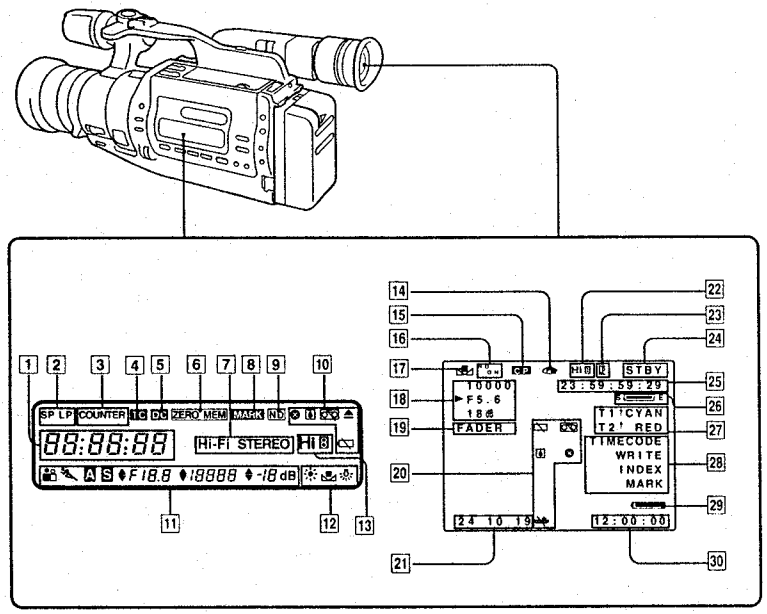
If this happens, eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

[7] The video heads may be contaminated (p.75).

[8] Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

[9] The lithium battery is weak or the lithium battery is not installed (p.11).

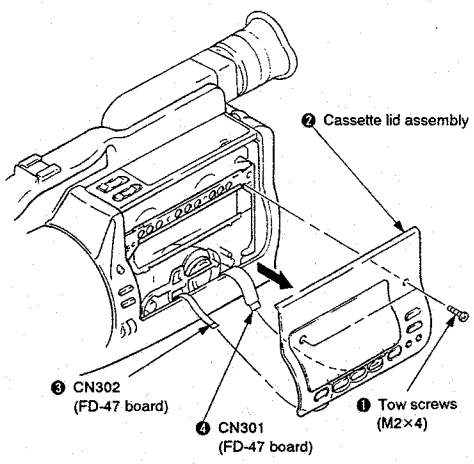
In the Display Window and the Viewfinder



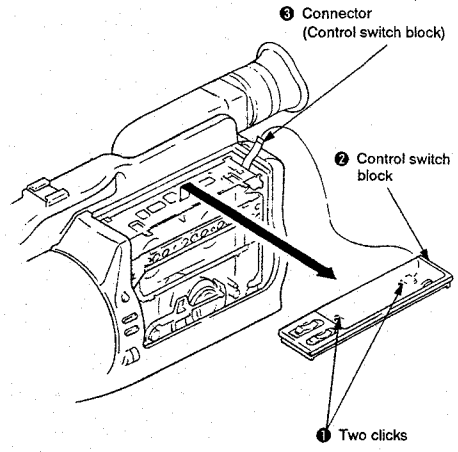
1 Tape counter, time or date indicator (p.12, 26)
2 Indicates the recording mode when recording/ playing back a tape (p.73)
3 COUNTER indicator (p.26, 70)
4 Time code indicator (p.67)
5 Data code indicator (p.27)
6 Zero memory indicator (p.26, 70)
7 Hi-fi stereo mode indicator (p.73)
8 Index mark indicator (p.60)
9 ND filter on indicator (p.18, 48)
10 Warning indicators (p.88)
11 PROGRAM AE and manual mode indicators (p.32, 43)
12 White balance mode indicators (p.37)
13 Playing back or recording in Hi8 format (p.73)
14 Manual focusing (p.35)
15 Custom mode indicator (p.58)
16 ND filter on/off indicator (p.18, 48)
17 White balance mode indicator (p.37)
18 PROGRAM AE and manual mode indicators (p.32, 43)
19 Fader function mode (p.50)
20 Warning indicators (p.88)
21 Data code (p.27)
22 Playing back or recording in Hi8 format (p.73)
23 Indicates the recording mode when recording/ playing back a tape (p.73)
24 Camera operation and tape transport mode indicators (p.16, 24)
25 Tape counter (p.26, 70)
26 Tape remaining indicator (p.16)
27 Title mode and title colour indicators (p.55)
28 Index function mode, zero memory and RC time code indicators (p.26, 60, 67, 70)
29 Battery remaining indicator (p.10)
30 Date or Time (p.12, 20)

SECTION 2
DISASSEMBLY

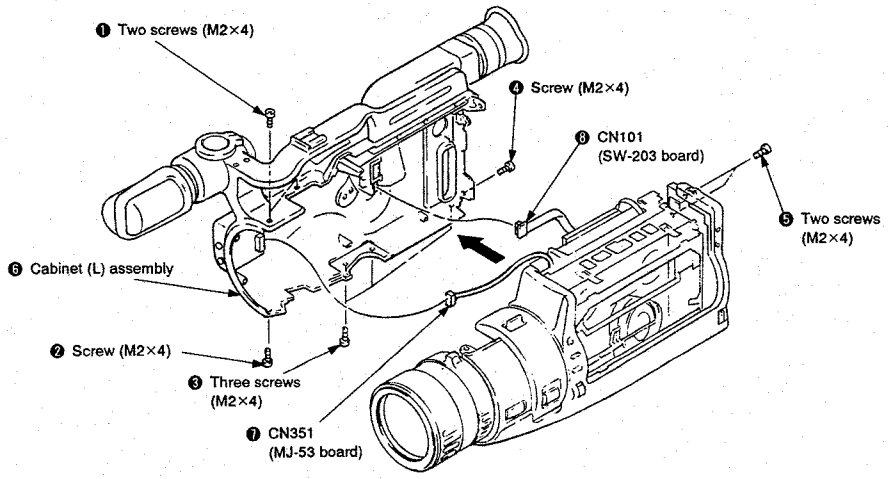
2-1. REMOVAL OF CASSETTE LID ASSEMBLY



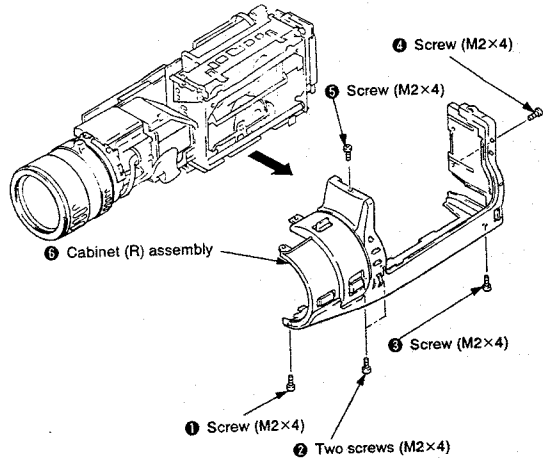
2-2. REMOVAL OF CONTROL SWITCH BLOCK



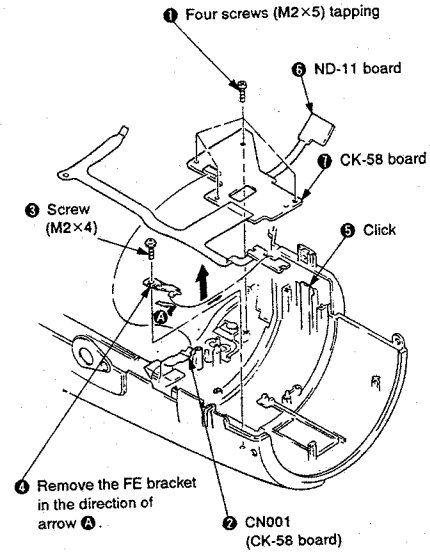
2-3. REMOVAL OF CABINET (L) ASSEMBLY



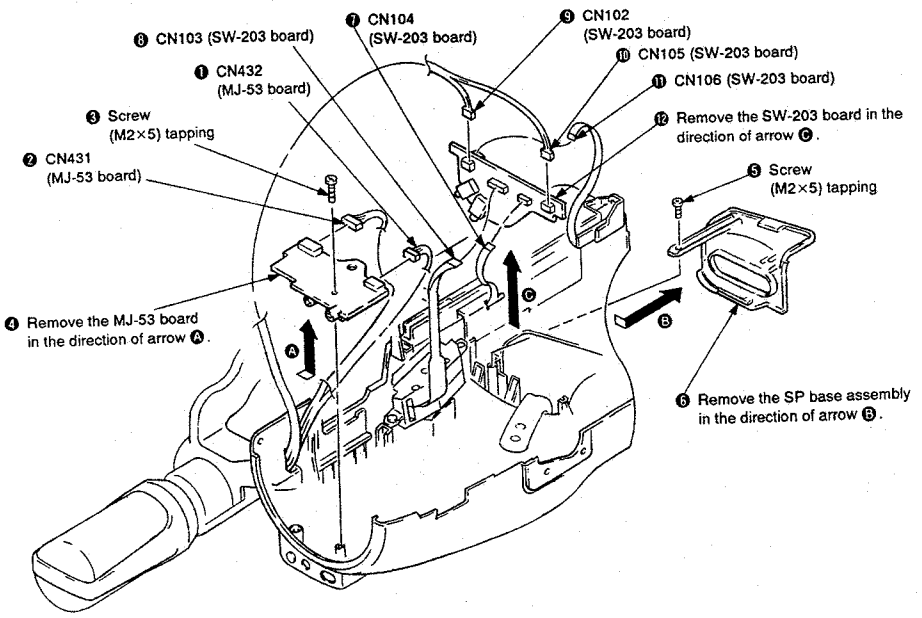
2-4. REMOVAL OF CABINET (R) ASSEMBLY



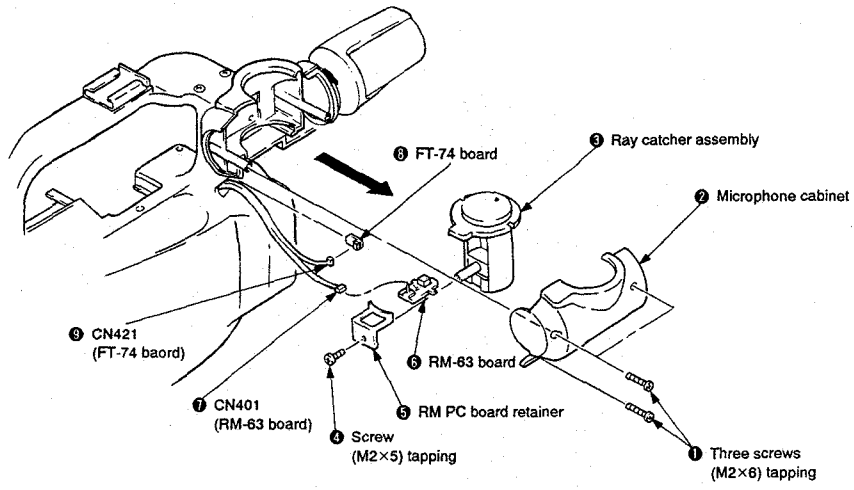
2-5. REMOVAL OF CK-58 AND ND-11 BOARDS



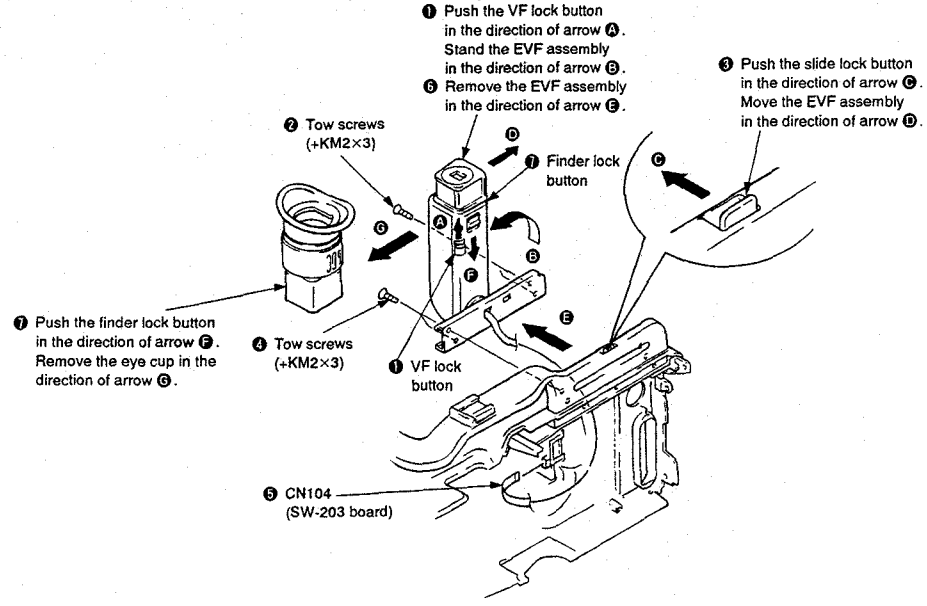
2-6. REMOVAL OF MJ-53 AND SW-203 BOARDS

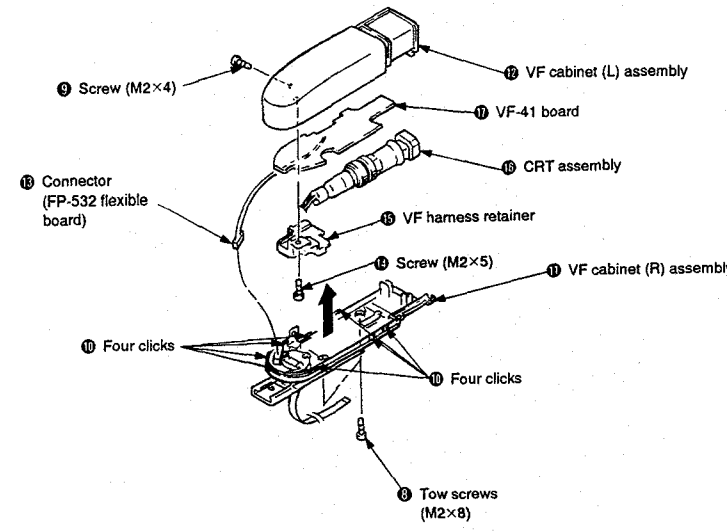


2-7. REMOVAL OF RM-63 AND FT-74 BOARDS

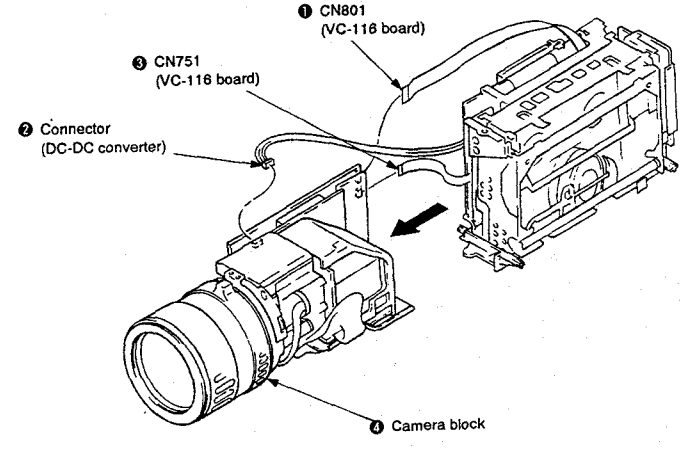


2-8. REMOVAL OF EVF ASSEMBLY (VF-41 BOARD)

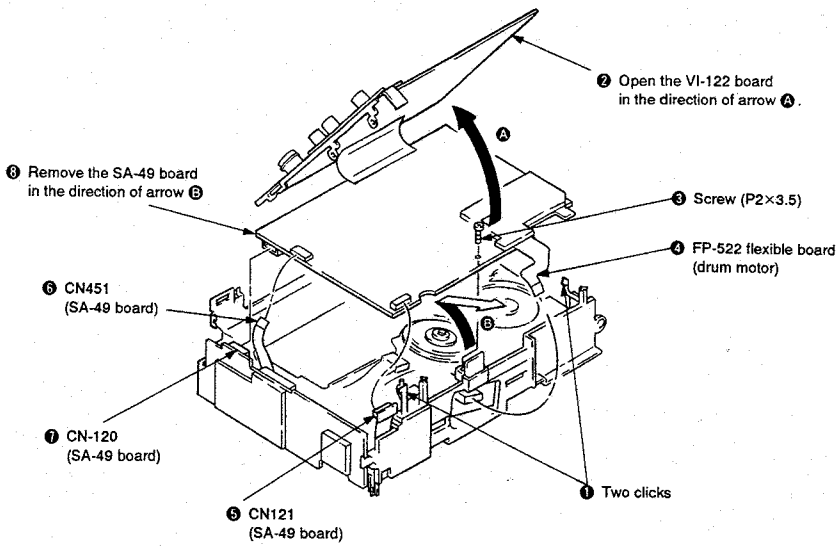

❶ Push the VF lock button in the direction of arrow Ⓐ. Stand the EVF assembly in the direction of arrow Ⓑ.
❻ Remove the EVF assembly in the direction of arrow Ⓔ.
❸ Push the slide lock button in the direction of arrow Ⓒ. Move the EVF assembly in the direction of arrow Ⓓ.
❷ Tow screws (+KM2×3)
❼ Finder lock button
❼ Push the finder lock button in the direction of arrow Ⓕ. Remove the eye cup in the direction of arrow Ⓖ.
❹ Tow screws (+KM2×3)
❶ VF lock button
❺ CN104 (SW-203 board)



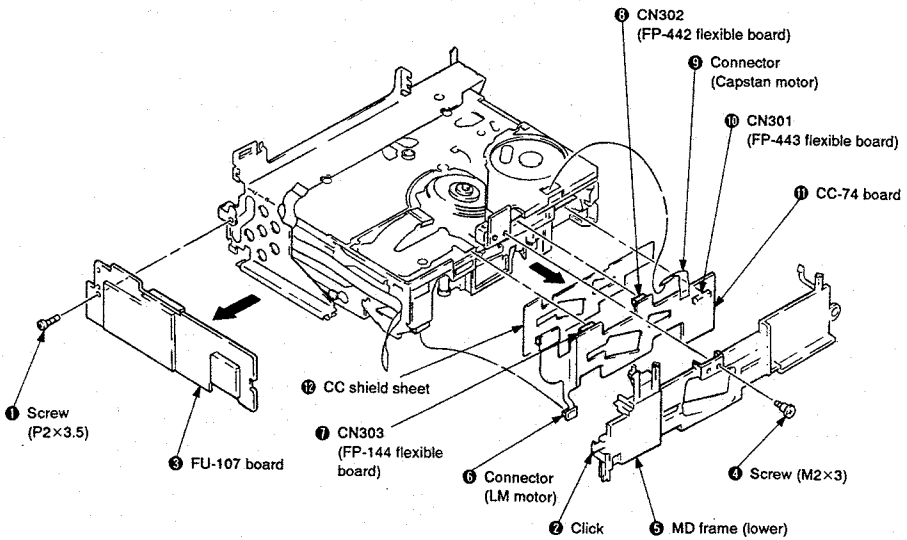
2-9. REMOVAL OF CAMERA BLOCK



2-10. REMOVAL OF VI-122 AND SA-49 BOARDS

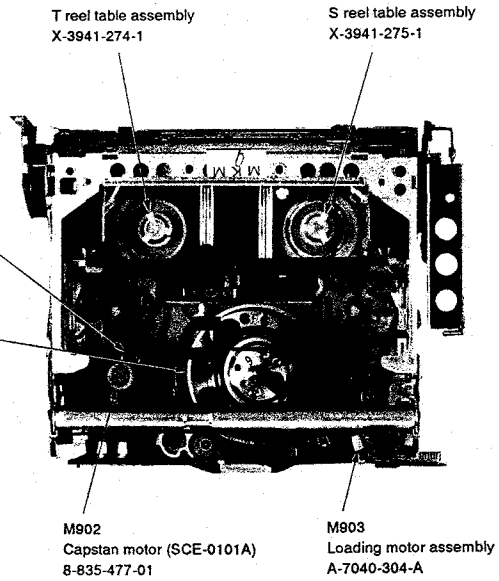

❷ Open the VI-122 board in the direction of arrow Ⓐ.
Ⓐ
❽ Remove the SA-49 board in the direction of arrow Ⓑ
❸ Screw (P2×3.5)
❹ FP-522 flexible board (drum motor)
Ⓑ
❻ CN451 (SA-49 board)
❼ CN-120 (SA-49 board)
❶ Two clicks
❺ CN121 (SA-49 board)

2-11. REMOVAL OF FU-107 AND CC-74 BOARDS



2-12. INTERNAL VIEWS

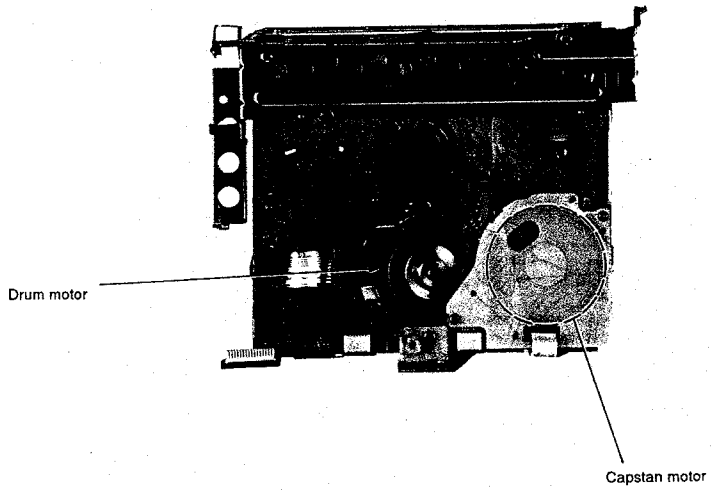
— Right side —



M901

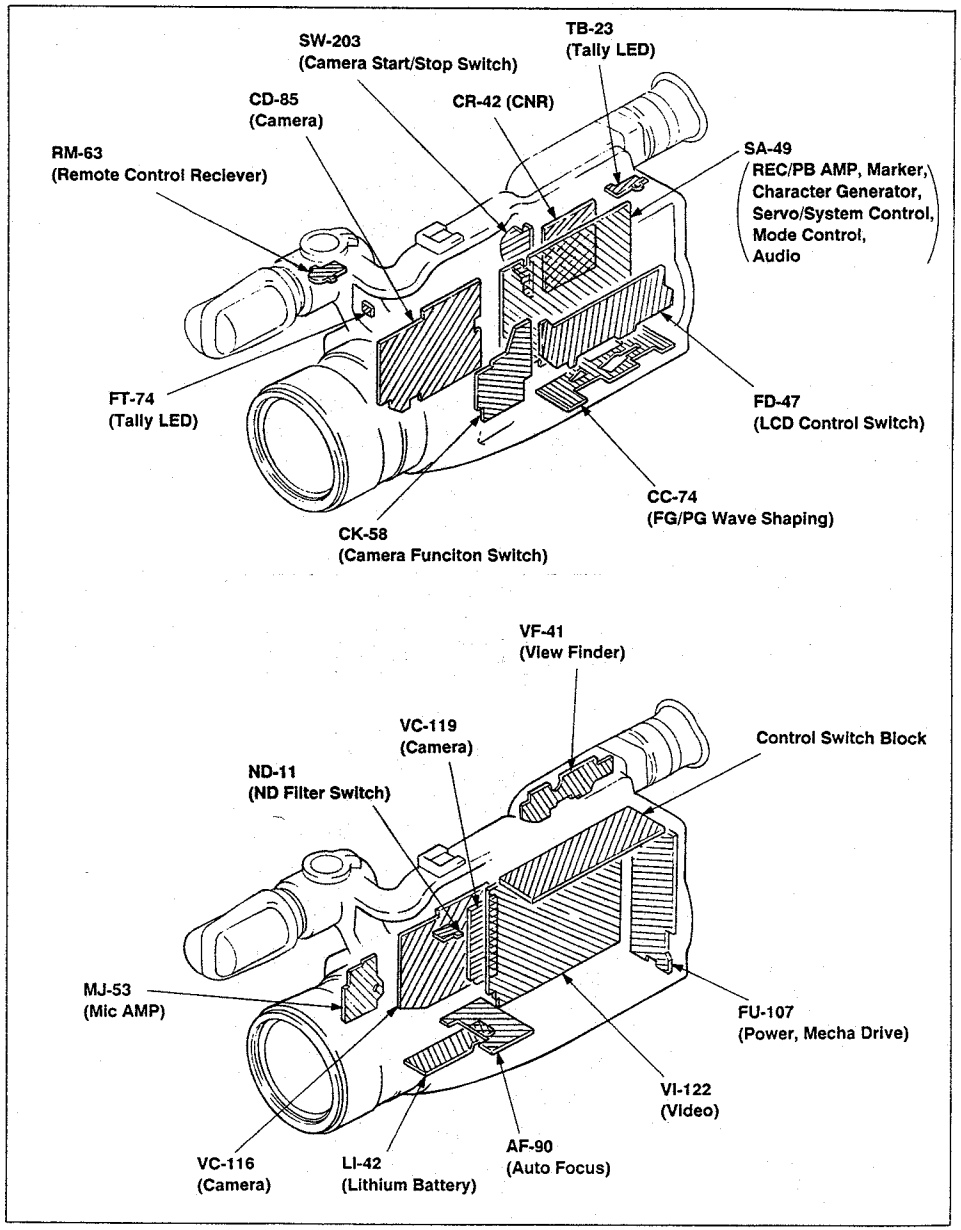
Drum assembly	A-7048-669-A (DGH-96A-R)
Upper drum assembly	A-7049-610-A (DGR-96-R)

— Left side —

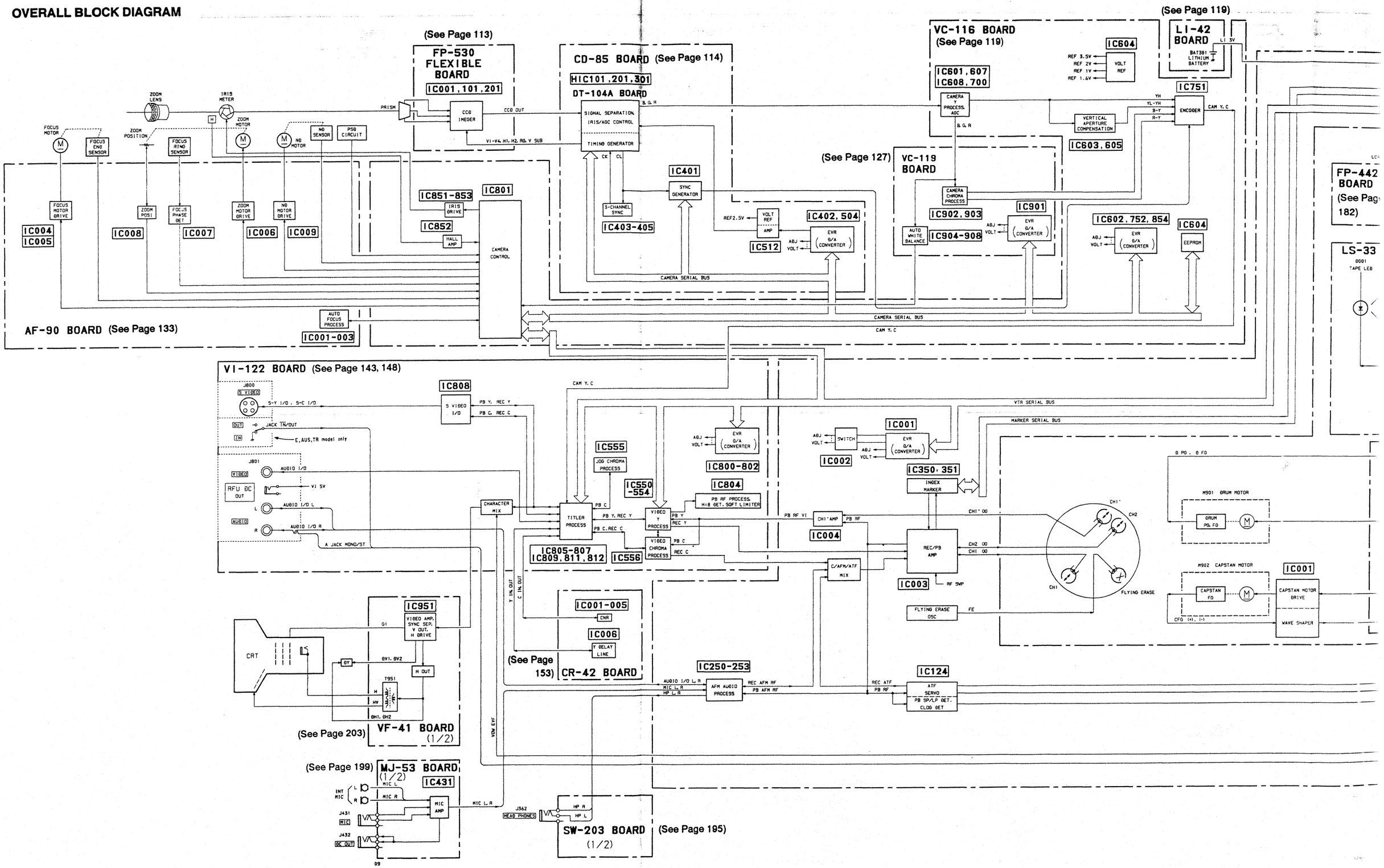


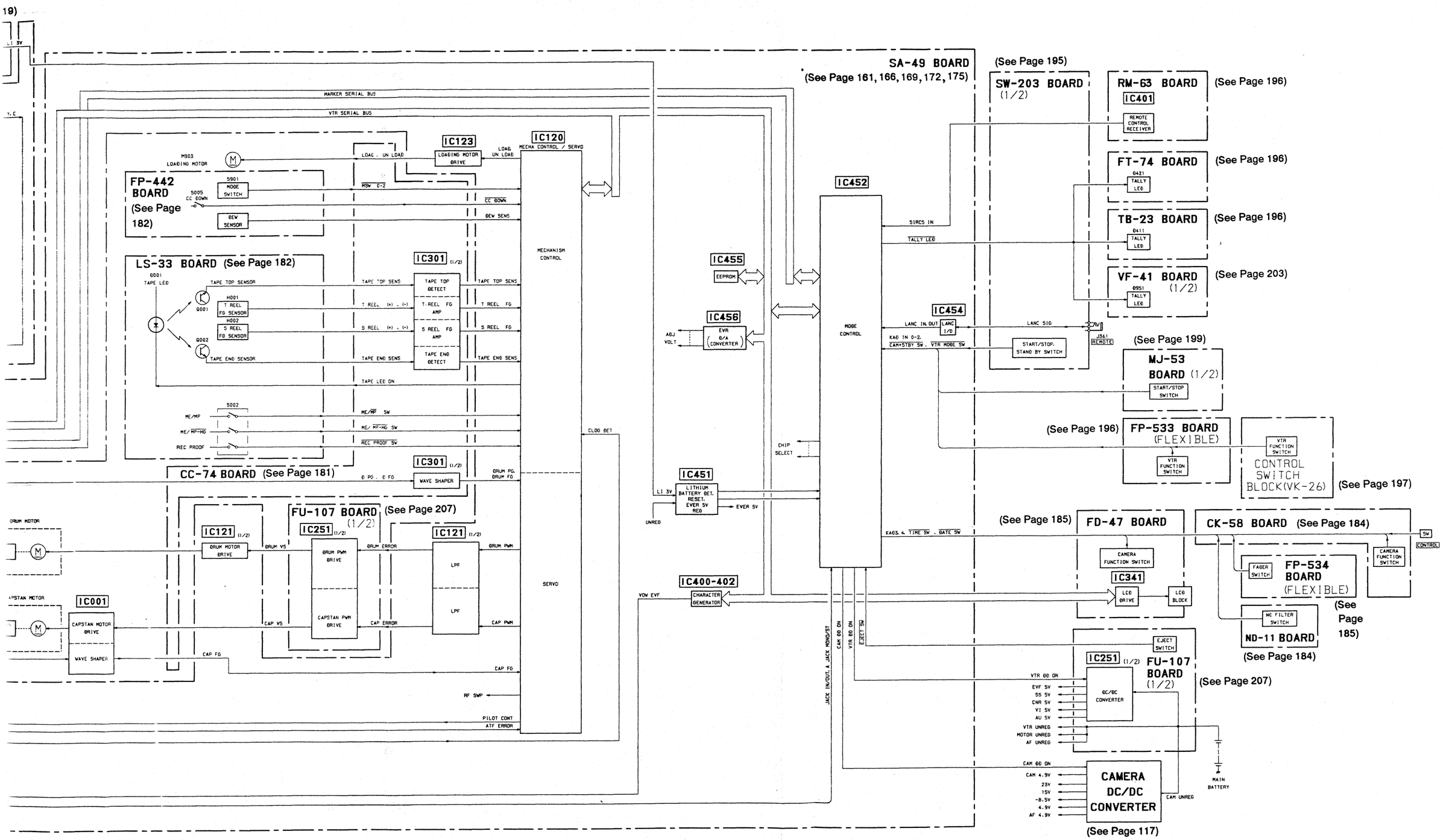
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION



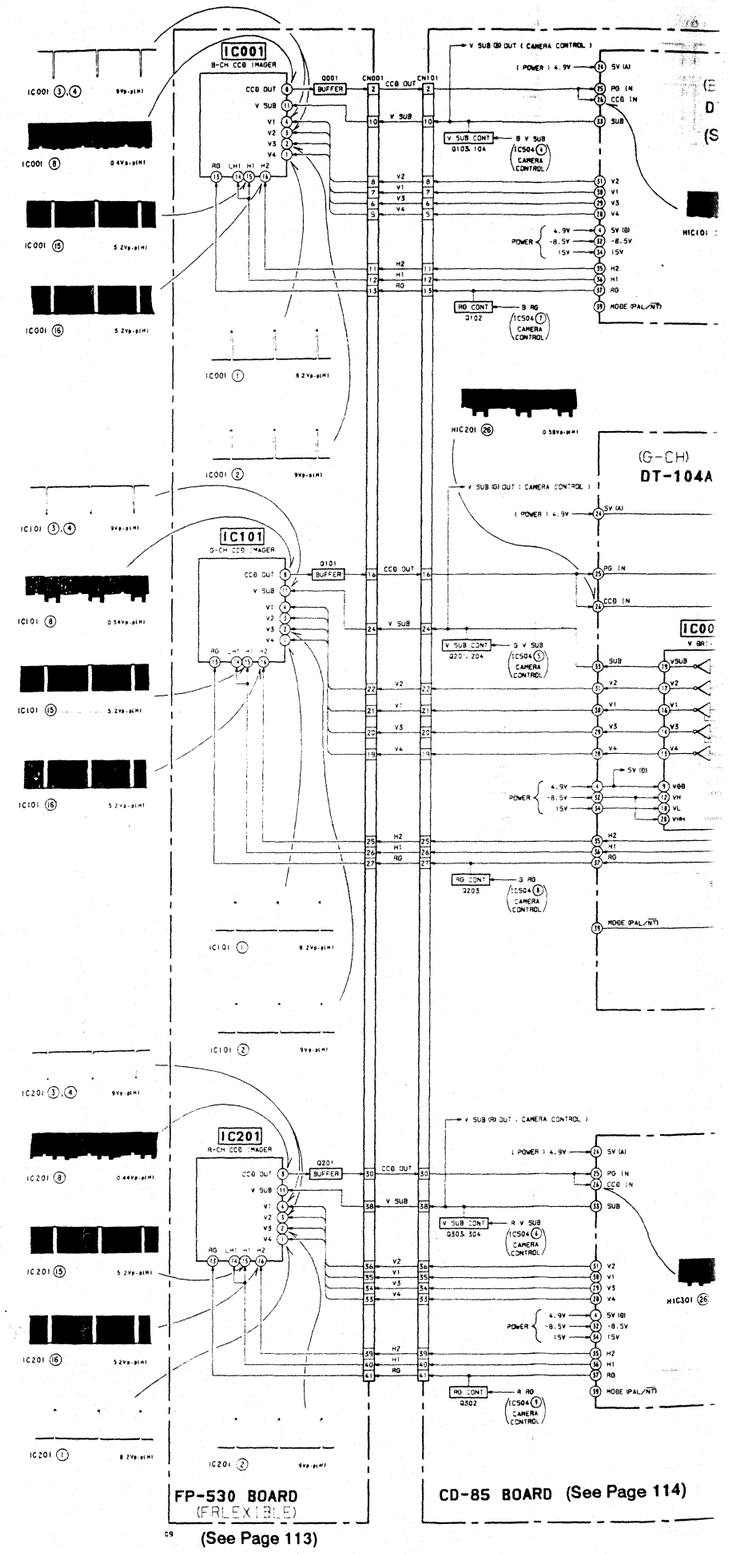
3-2. OVERALL BLOCK DIAGRAM




19)
MARKER SERIAL BUS
VTR SERIAL BUS
M903 LOADING MOTOR
LOAD . UN LOAD
IC123
LOADING MOTOR DRIVE
LOAD UN LOAD
IC120
MECHA CONTROL / SERVO
FP-442 BOARD (See Page 182)
S005 CC DOWN
S901 MODE SWITCH
MSW 0-2
CC DOWN
DEW SENSOR
DEW SENS
MECHANISM CONTROL
LS-33 BOARD (See Page 182)
Q001 TAPE LED
TAPE TOP SENSOR
Q001
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
Q002
TAPE END SENSOR
IC301 (1/2)
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
TAPE TOP SENS
T REEL (+) , (-)
T REEL FG
S REEL (+) , (-)
S REEL FG
TAPE END SENS
TAPE LED ON
S002
ME/MP
ME/MP-HG
REC PROOF
ME/MP SW
ME/MP-HG SW
REC PROOF SW
CLOG DET
CC-74 BOARD (See Page 181)
IC301 (1/2)
WAVE SHAPER
Ø PG . Ø FG
DRUM PG. DRUM FG
FU-107 BOARD (See Page 207)
IC121 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC251 (1/2)
DRUM PWM DRIVE
DRUM ERROR
IC121 (1/2)
LPF
DRUM PWM
SERVO
DRUM MOTOR
CAPSTAN MOTOR
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
LPF
CAP PWM
CAP FG
RF SWP
PILOT CONT
ATF ERROR
IC455
EEPROM
IC456
EVR D/A CONVERTER
ADJ VOLT
CHIP SELECT
IC451
LITHIUM BATTERY DET, RESET, EVER 5V REG
LI 3V
UNREG
EVER 5V
IC400-402
CHARACTER GENERATOR
VOW EVF
SA-49 BOARD (See Page 161, 166, 169, 172, 175)
IC452
MODE CONTROL
JACK IN/OUT, A JACK MONI/DET
CAM ØØ ON
VTR ØØ ON
EJECT SW
(See Page 195)
SW-203 BOARD (1/2)
RM-63 BOARD (See Page 196)
IC401
REMOTE CONTROL RECEIVER
FT-74 BOARD (See Page 196)
D421 TALLY LED
TB-23 BOARD (See Page 196)
D411 TALLY LED
VF-41 BOARD (See Page 203) (1/2)
D951 TALLY LED
SIRCS IN
TALLY LED
IC454
LANC IN OUT
LANC I/O
LANC SIG
KA0 IN 0-2
CAM+STBY SW , VTR MODE SW
START/STOP, STAND BY SWITCH
J361 REMOTE
(See Page 199)
MJ-53 BOARD (1/2)
START/STOP SWITCH
(See Page 196)
FP-533 BOARD (FLEXIBLE)
VTR FUNCTION SWITCH
VTR FUNCTION SWITCH
CONTROL SWITCH BLOCK(VK-26)
(See Page 197)
(See Page 185)
FD-47 BOARD
CK-58 BOARD (See Page 184)
KA0S, 4, TIME SW , DATE SW
5V
CONTROL
CAMERA FUNCTION SWITCH
IC341
LCD DRIVE
LCD BLOCK
FADER SWITCH
FP-534 BOARD (FLEXIBLE)
CAMERA FUNCTION SWITCH
MC FILTER SWITCH
ND-11 BOARD
(See Page 184)
(See Page 185)
EJECT SWITCH
IC251 (1/2) FU-107 BOARD (1/2)
(See Page 207)
VTR ØØ ON
EVF 5V
SS 5V
CNR 5V
VI 5V
AU 5V
VTR UNREG
MOTOR UNREG
AF UNREG
DC/DC CONVERTER
CAM ØØ ON
CAM 4.9V
23V
15V
-8.5V
4.9V
AF 4.9V
CAMERA DC/DC CONVERTER
CAM UNREG
(See Page 117)
MAIN BATTERY

CCD-VX1E

3-3. CAMERA (1) BLOCK DIAGRAM



(B-CH)

DT-104A BOARD (HIC101) --SAME AS G-CH--

(See Page 116)

(G-CH) **(See Page 115)**

DT-104A BOARD (HIC201)

(R-CH)

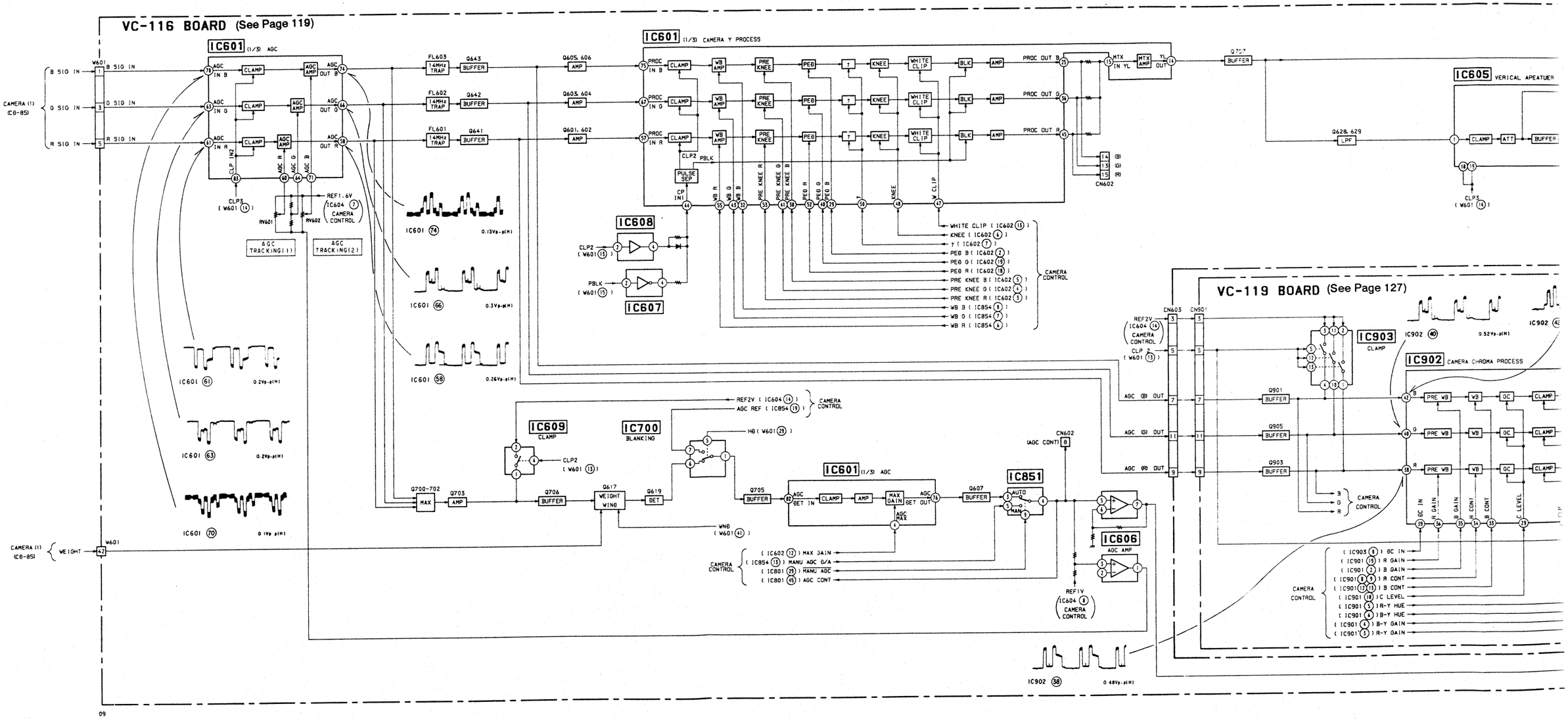
DT-104A BOARD (HIC301) --SAME AS G-CH--

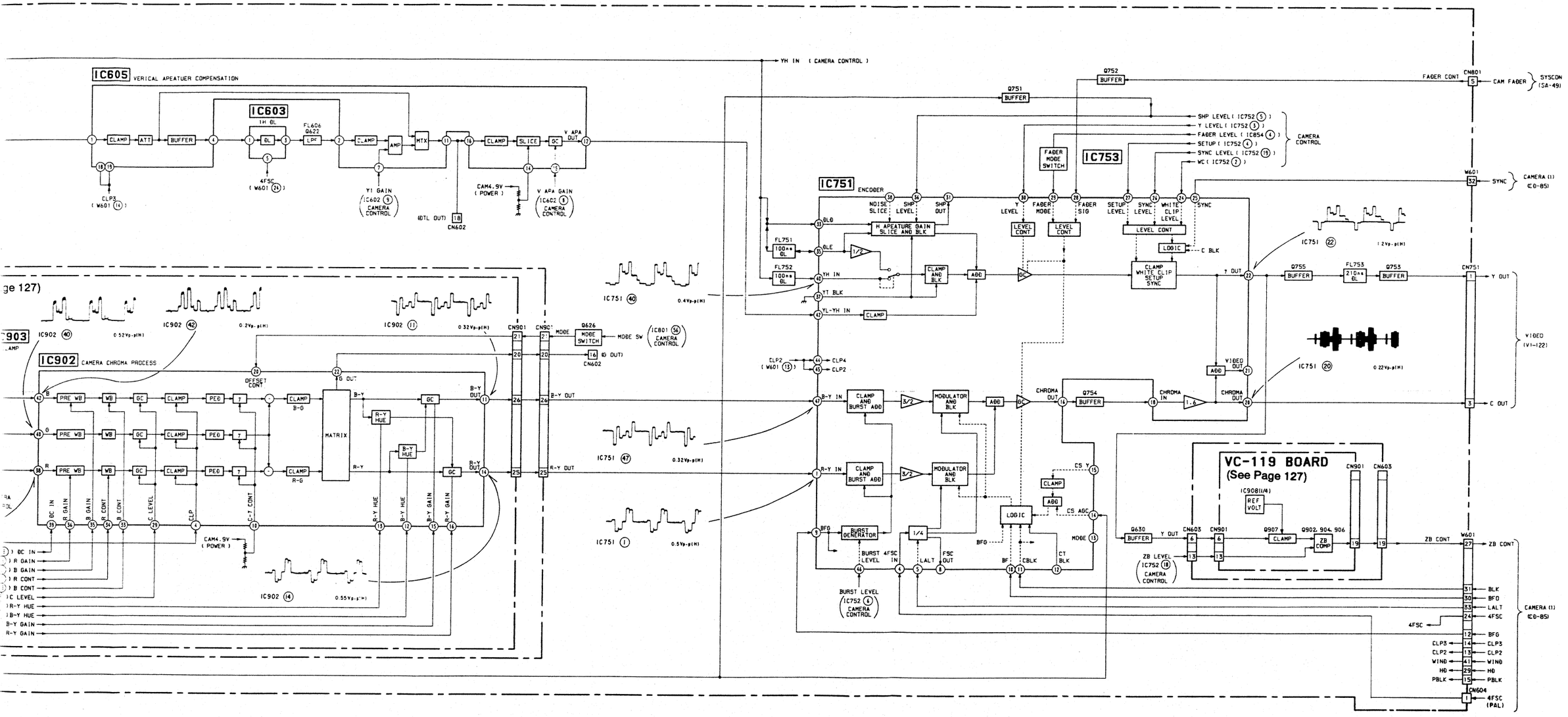
(See Page 114)

CD-85 BOARD **(See Page 114)**

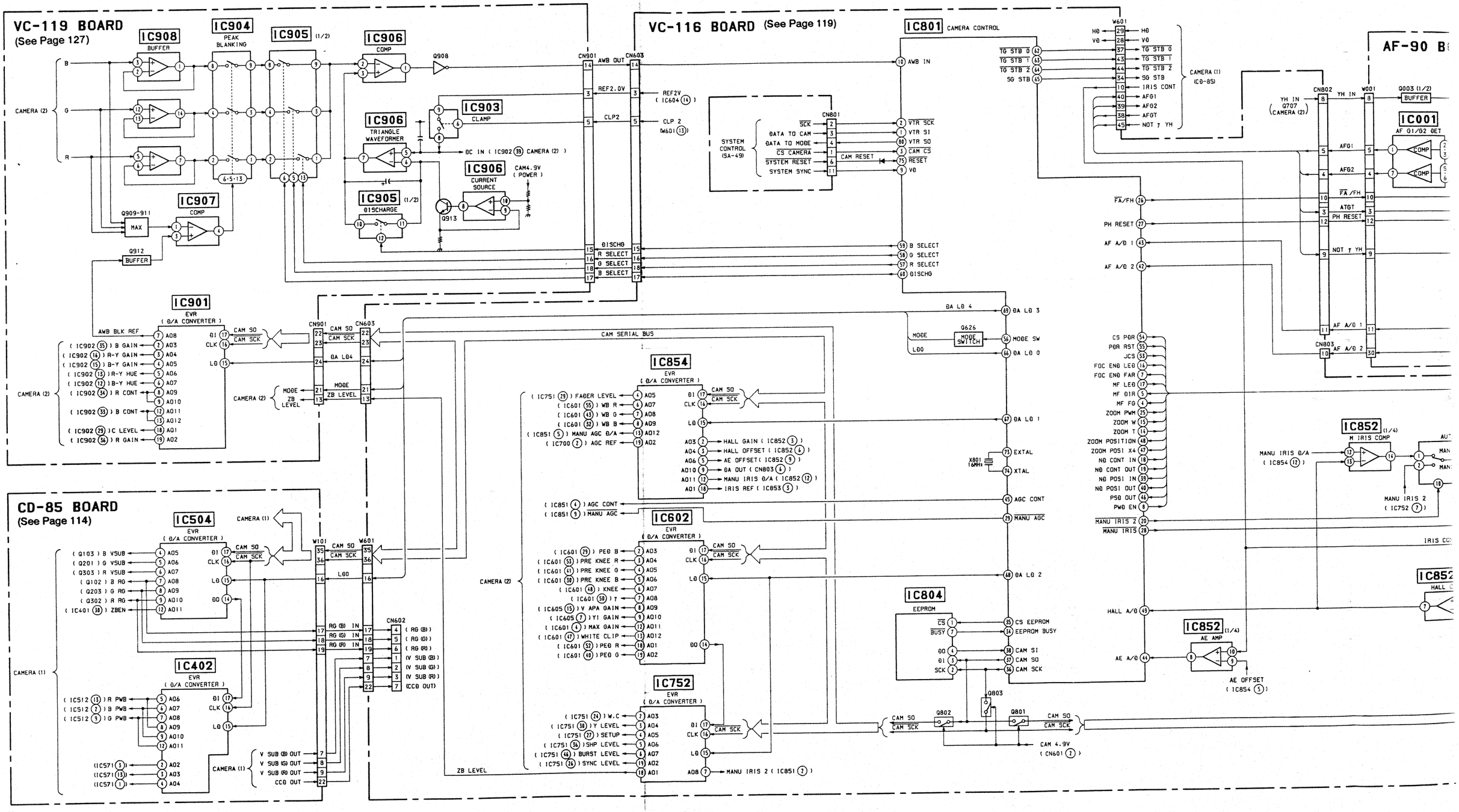
VC-116 BOARD **(See Page 119)**

3-4. CAMERA (2) BLOCK DIAGRAM



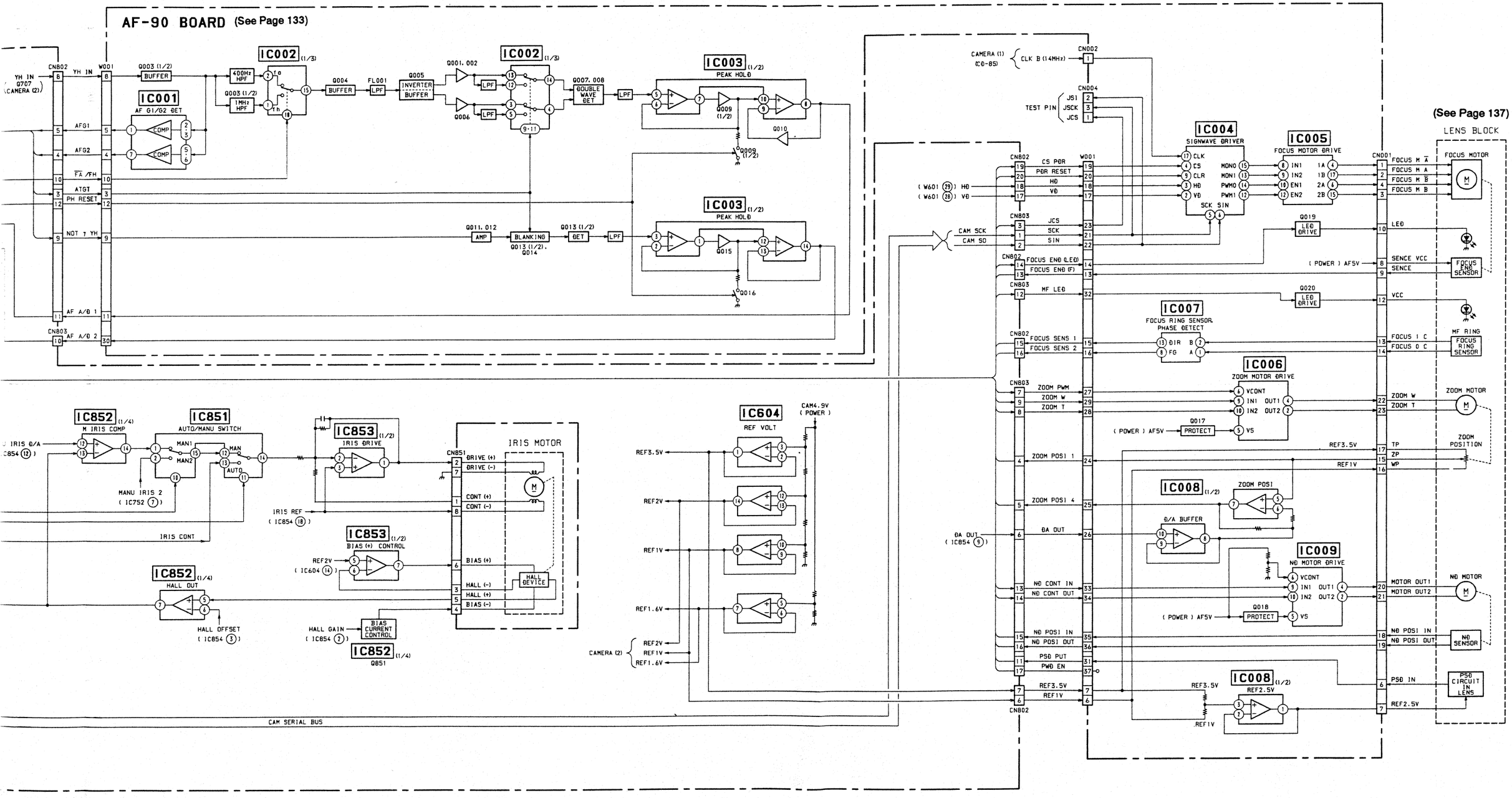

IC605 VERICAL APEATUER COMPENSATION
IC603
1H DL
FL606 Q622 LPF
CLAMP
ATT
BUFFER
DL
CLAMP
AMP
MTX
CLAMP
SLICE
GC
V APA OUT
CLP3 (W601 (14))
4FSC (W601 (24))
Y1 GAIN (IC602 (3) CAMERA CONTROL)
(DTL OUT) 18 CN602
CAM4.9V (POWER)
V APA GAIN (IC602 (1) CAMERA CONTROL)
YH IN (CAMERA CONTROL)
IC751 ENCODER
NOISE SLICE
SHP LEVEL
SHP OUT
Y LEVEL
FADER MODE
FADER SIG
SETUP LEVEL
SYNC LEVEL
WHITE CLIP LEVEL
SYNC
BL0
BLE
YH IN
YI BLK
YL-YH IN
H APEATURE GAIN SLICE AND BLK
CLAMP AND BLK
ADD
GC
LEVEL CONT
LOGIC
C BLK
CLAMP WHITE CLIP SETUP SYNC
Y OUT
FL751 100n× DL
FL752 100n× DL
FL753 210n× DL
Q751 BUFFER
Q752 BUFFER
Q755 BUFFER
Q755 BUFFER
FADER MODE SWITCH
IC753
SHP LEVEL (IC752 (5))
Y LEVEL (IC752 (3))
FADER LEVEL (IC854 (4))
SETUP (IC752 (4))
SYNC LEVEL (IC752 (19))
WC (IC752 (2))
CAMERA CONTROL
FADER CONT
CN801 5
CAM FADER
SYSCON (SA-49)
W601 32
SYNC
CAMERA (1) (C0-85)
CN751 1
Y OUT
VIDEO (V1-122)
IC751 (22) 1.2Vp-p(H)
IC751 (20) 0.22Vp-p(H)
CLP2 (W601 (13))
CLP4
CLP2
CLAMP AND BURST ADD
3/2
MODULATOR AND BLK
ADD
GC
CHROMA OUT
Q754 BUFFER
CHROMA IN
1-6
CHROMA OUT
VIDEO OUT
C OUT
B-Y IN
R-Y IN
BFG
BURST GENERATOR
BURST 4FSC LEVEL
1/4
LALT
FSC OUT
BF
CBLK
CT BLK
LOGIC
CS Y
CLAMP
ADD
CS AGC
MODE
BURST LEVEL (IC752 (6) CAMERA CONTROL)
VC-119 BOARD
(See Page 127)
IC908(1/4)
REF VOLT
Q630 BUFFER
Y OUT
CN603 6
CN901 6
Q907
CLAMP
Q902, 904, 906
ZB COMP
CN901
CN603
ZB CONT
W601 27
ZB LEVEL (IC752 (18) CAMERA CONTROL)
BLK
BFO
LALT
4FSC
BFG
CLP3
CLP2
WIND
HD
PBLK
CN604 1
4FSC (PAL)
CAMERA (1) (C0-85)
IC902 CAMERA CHROMA PROCESS
IC902 (40) 0.52Vp-p(H)
IC902 (42) 0.2Vp-p(H)
IC902 (11) 0.32Vp-p(H)
IC751 (40) 0.4Vp-p(H)
CN901
CN902
MODE
Q626 MODE SWITCH
MODE SW
(IC801 (56) CAMERA CONTROL)
(G OUT) 16 CN602
OFFSET CONT
TG OUT
PRE WB
WB
GC
CLAMP
PED
7
CLAMP B-G
CLAMP R-G
MATRIX
B-Y
R-Y
B-Y HUE
R-Y HUE
B-Y OUT
R-Y OUT
B-Y OUT
R-Y OUT
IC751 (47) 0.32Vp-p(H)
IC751 (1) 0.5Vp-p(H)
IC902 (14) 0.55Vp-p(H)
DC IN
R GAIN
B GAIN
R CONT
B CONT
C LEVEL
CLP
C-Y CONT
R-Y HUE
B-Y HUE
B-Y GAIN
R-Y GAIN
CAM4.9V (POWER)

3-5. CAMERA CONTROL BLOCK DIAGRAM

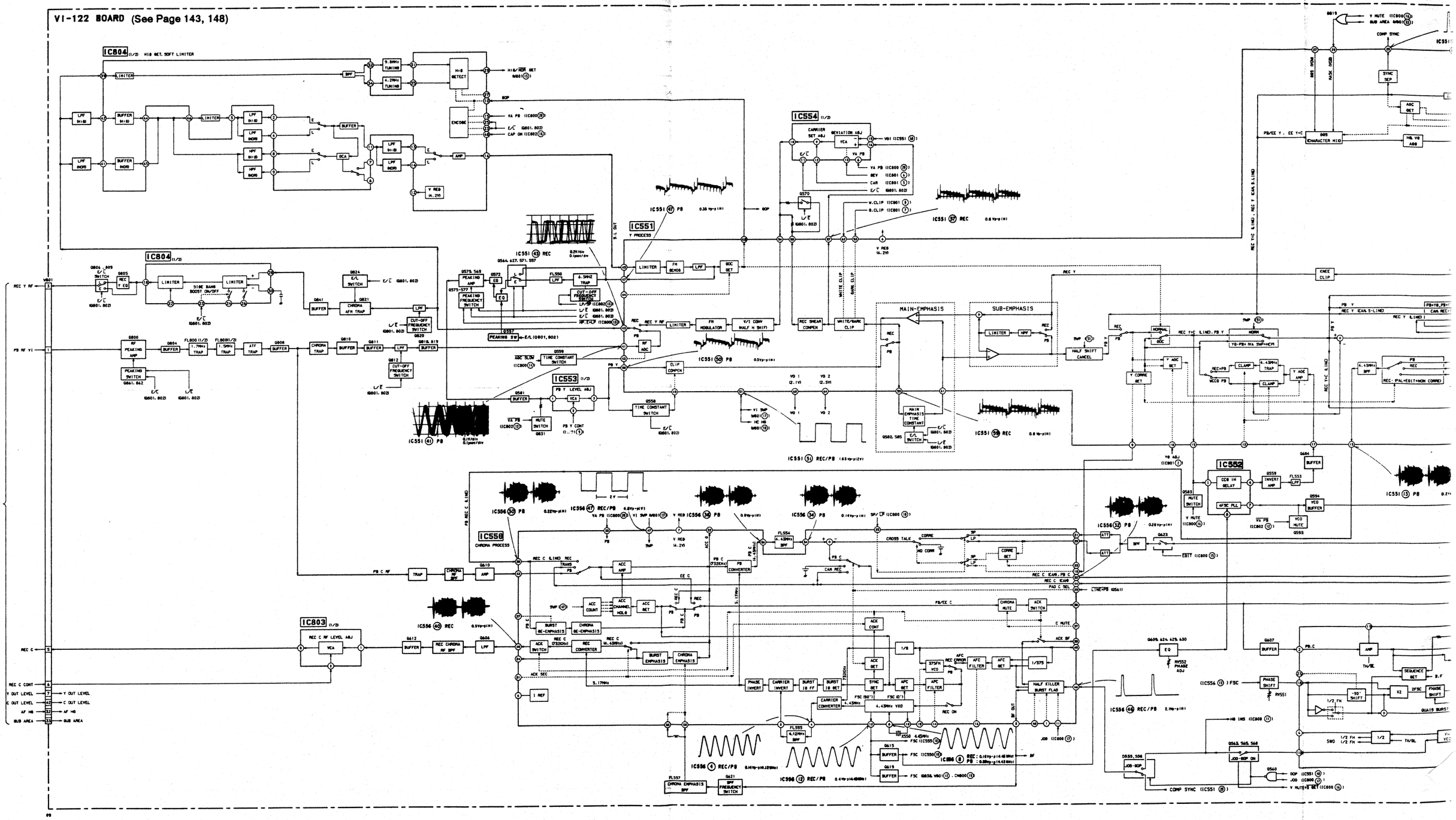


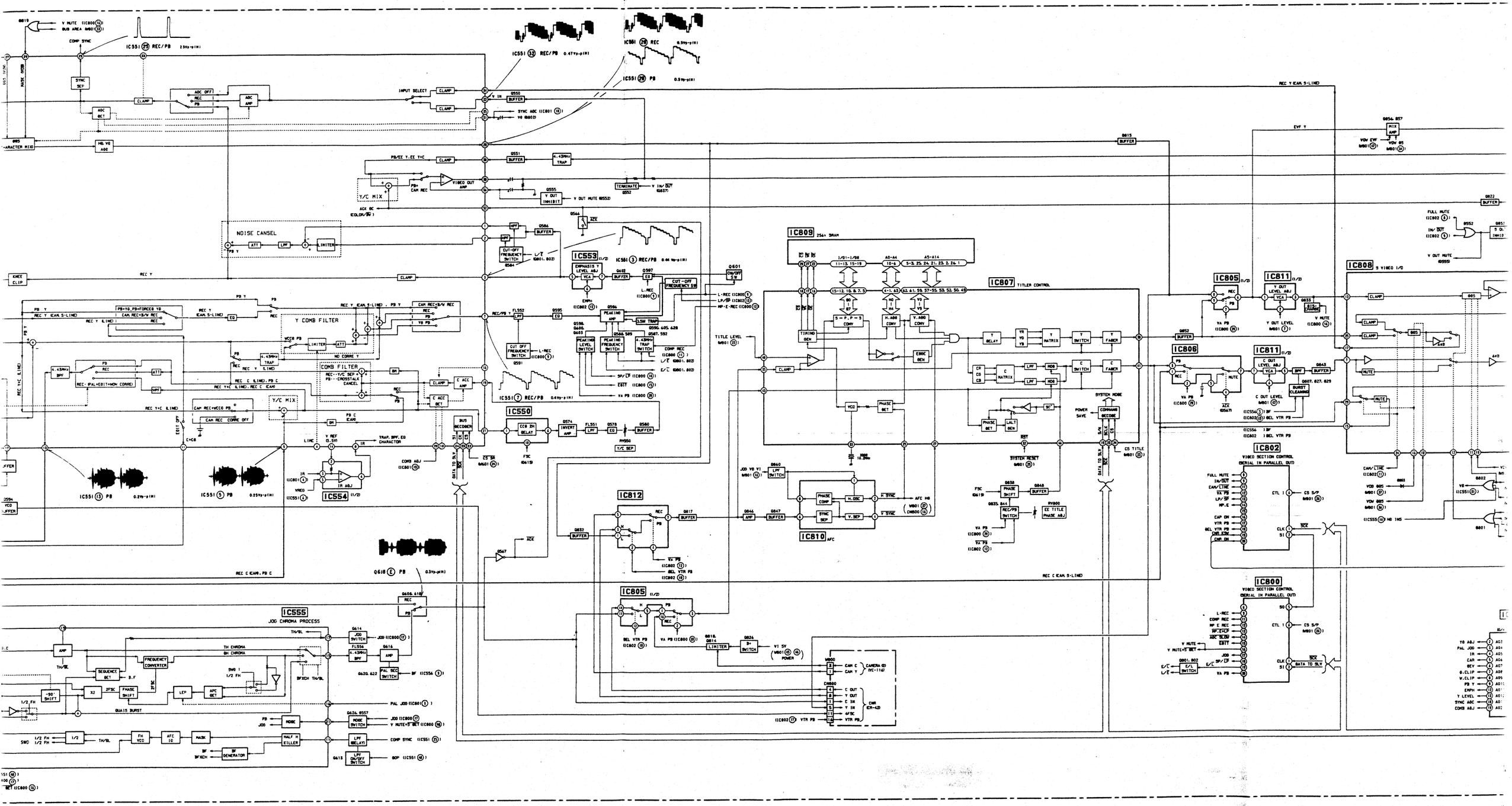
09

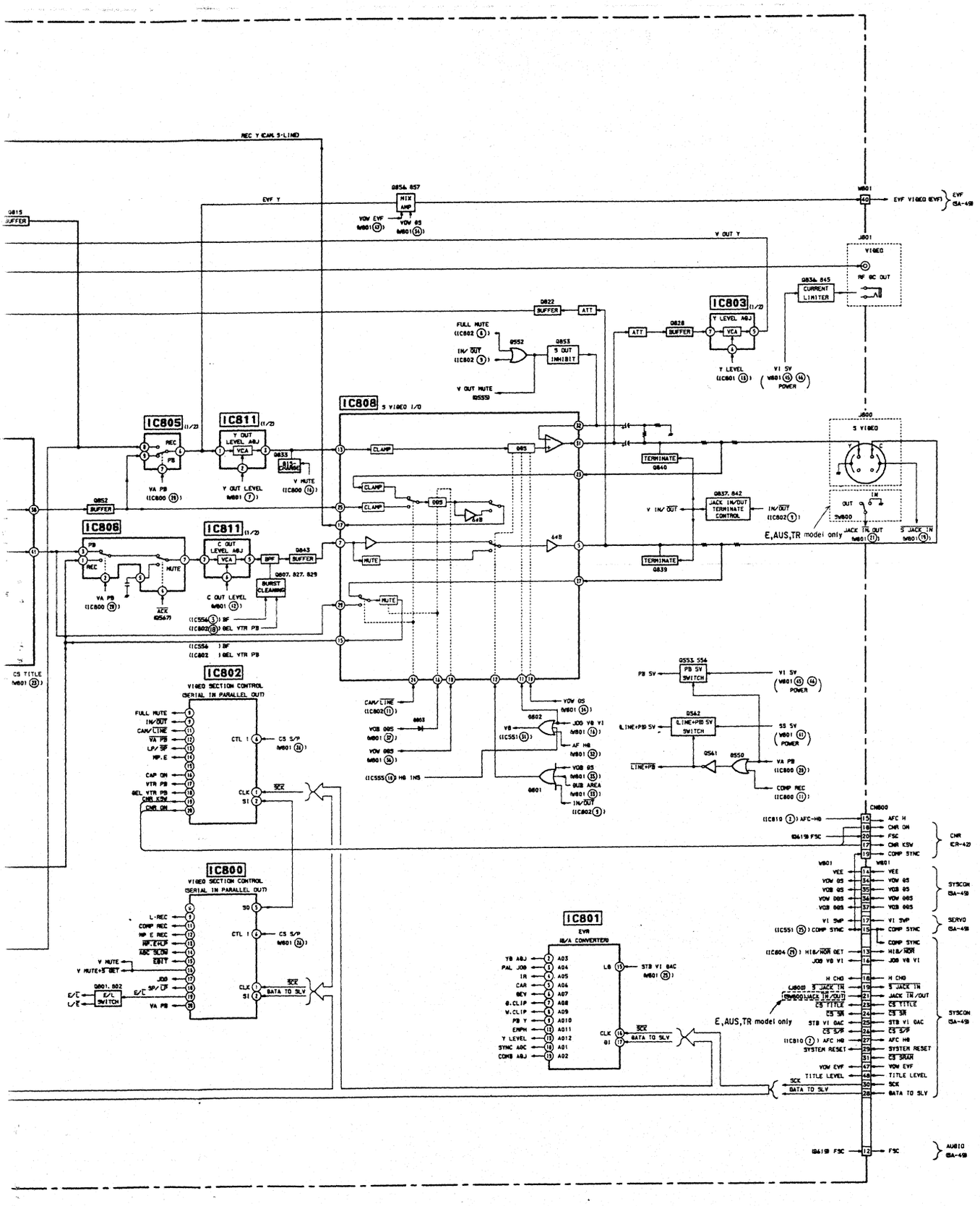
AF-90 BOARD (See Page 133)



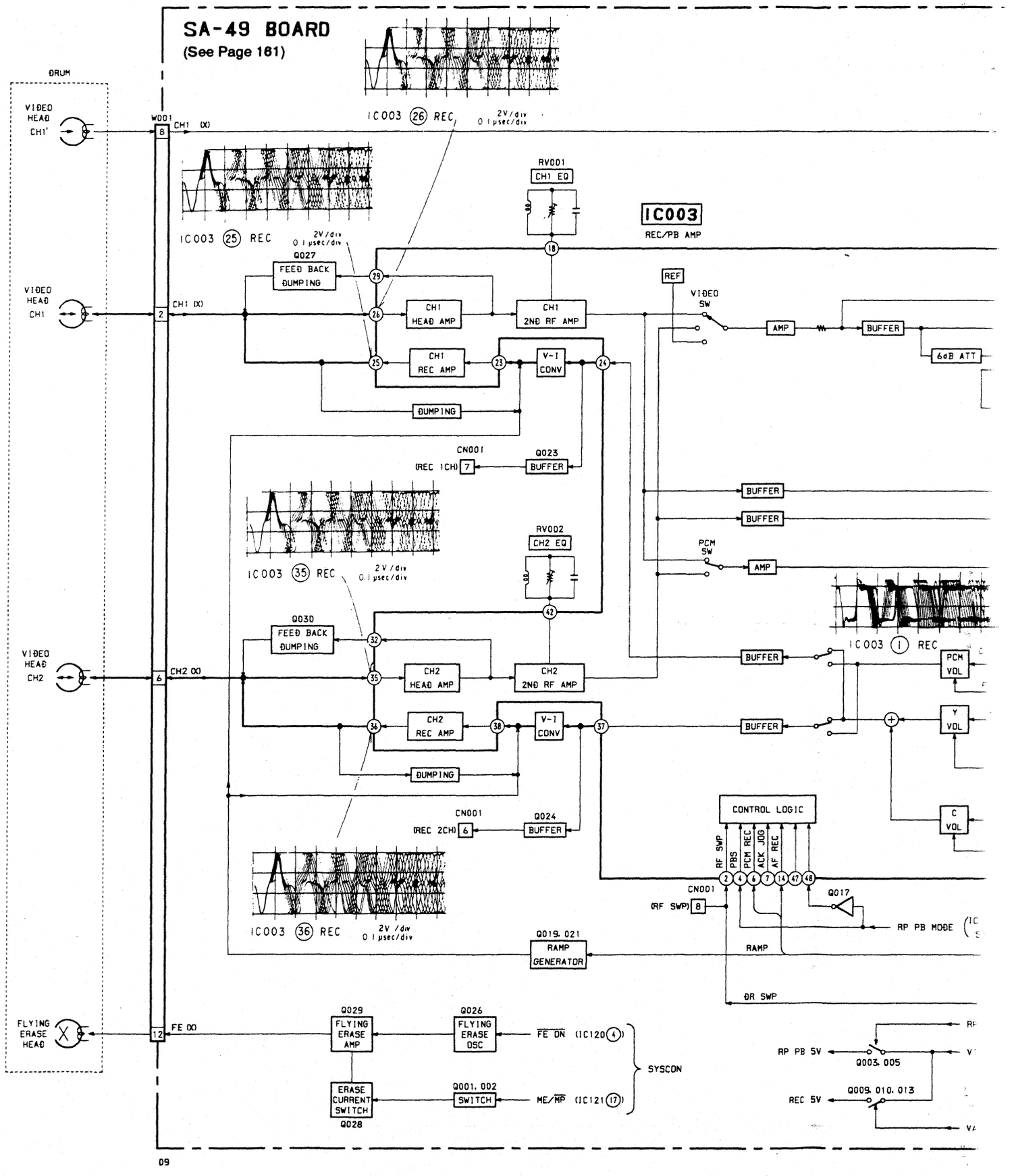
3-6. VIDEO (1) BLOCK DIAGRAM

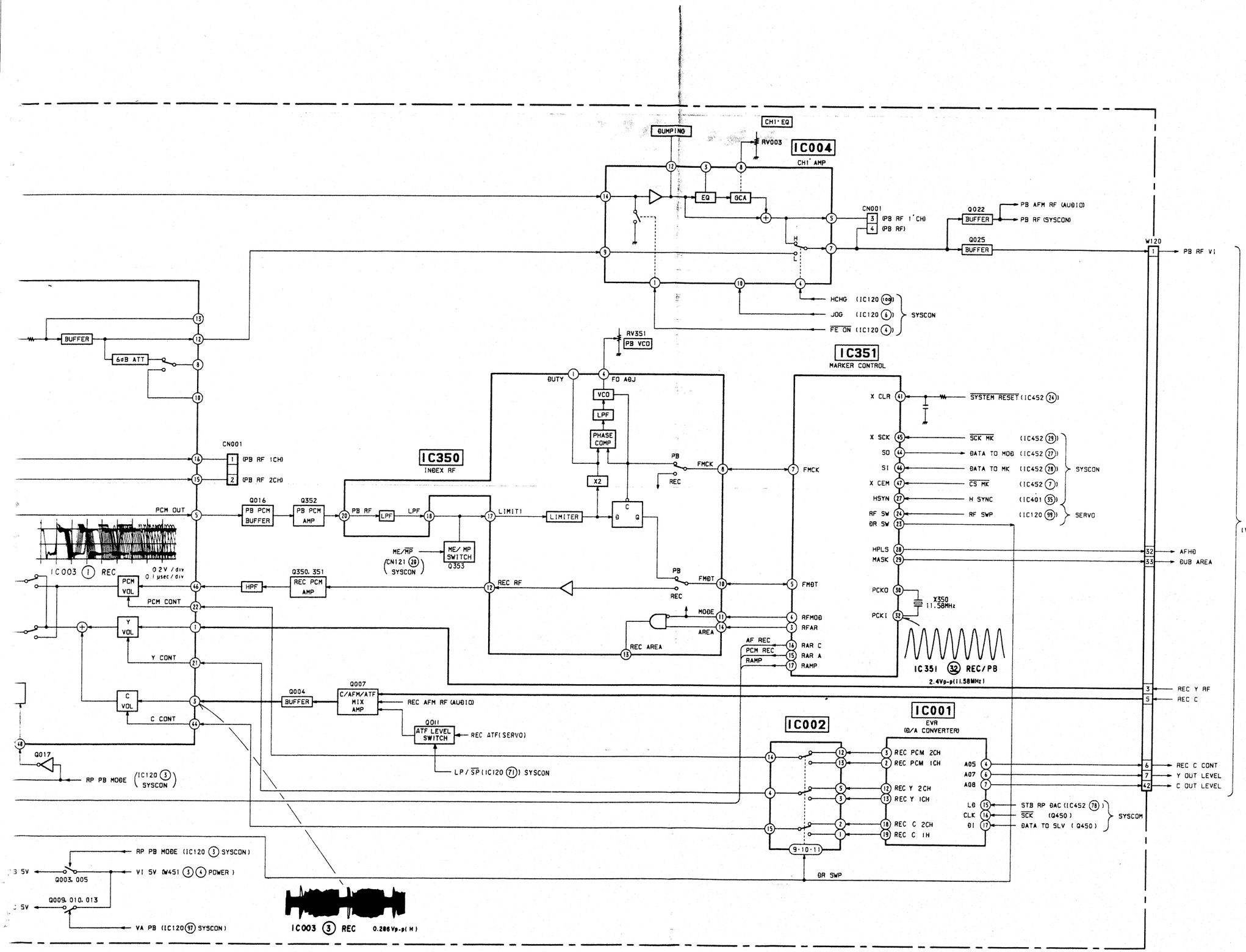


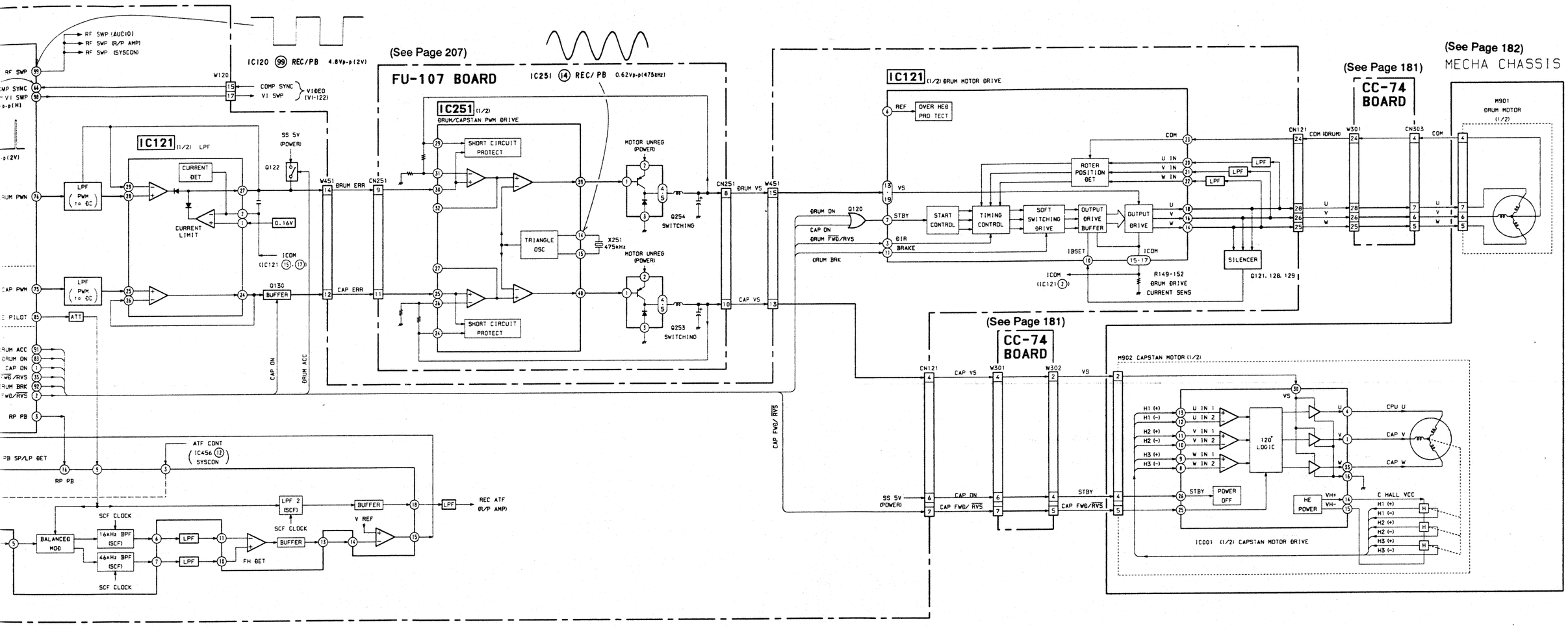

IC809 256+ SRAM
IC807 TITLER CONTROL
IC808 S VIDEO I/O
IC805 (1/2)
IC811 (1/2)
IC806
IC802 VIDEO SECTION CONTROL (SERIAL IN PARALLEL OUT)
IC800 VIDEO SECTION CONTROL (SERIAL IN PARALLEL OUT)
IC553 (1/2)
IC550
IC554 (1/2)
IC555 JOG CHROMA PROCESS
IC812
IC810 AFC
Y COMB FILTER
C COMB FILTER
NOISE CANSEL
Y/C MIX
REC Y (CAM. S-LINE)
REC C (CAM. PB C)
EVF Y
JOG Y0 V1
JOG
PAL JOG
SYSTEM RESET
POWER SAVE
COMMAND DECODE
CAMERA (D) (VC-116)
CAM (CR-420)
VTR PB
REC/PB
PB
REC
BUFFER
LIMITER
CLAMP
INVERT AMP
PHASE SHIFT
SEQUENCE DET
FREQUENCY CONVERTER
APC DET
AFC IG
MASK
HALF H EILLER
BF GENERATOR
PAL SEC SWITCH
MODE SWITCH
LPF SWITCH
CUT-OFF FREQUENCY SW
EMPHASIS Y LEVEL ADJ
PEAKING LEVEL SWITCH
PEAKING FREQUENCY SWITCH
4.43MHz TRAP SWITCH
4.43MHz BPF
TRAP, BPF, ED CHARACTOR
BUS DECODER
CCD 2H DELAY
Y DELAY
Y MATRIX
Y SWITCH
Y FADER
C MATRIX
C SWITCH
C FADER
TIMING GEN
EDGE GEN
PHASE DET
LALT GEN
S-P,P-S CONV
H.ADD CONV
V.ADD CONV
C OUT LEVEL ADJ
Y OUT LEVEL ADJ
BURST CLEANING
FULL MUTE
IN/OUT
CAM/LINE
VA PB
LP/SP
HP.E
CAP ON
VTR PB
BEL VTR PB
CHR ON
EDIT
JOG
E/C
E/E
CS S/P
SCK
SI
SO
CLK
CS TITLE
EE TITLE PHASE ADJ
REC/PB SWITCH
V MUTE
V MUTE+S SET
COMP REC
COMP SYNC
V OUT MUTE
L-REC
CAM C
CAM Y
C OUT
Y OUT
C IN
Y IN
AFSC
V1 5V
POWER
SYNC ADC
HD. V0 ADC
CHARACTER M130
TITLE LEVEL
IC551 (25) REC/PB 2.5Vp-p(H)
IC551 (12) REC/PB 0.47Vp-p(H)
IC551 (28) REC 0.5Vp-p(H)
IC551 (26) PB 0.3Vp-p(H)
IC551 (13) PB 0.2Vp-p(H)
IC551 (5) PB 0.25Vp-p(H)
IC551 (3) REC/PB 0.44 Vp-p(H)
IC551 (7) REC/PB 0.4Vp-p(H)
Q618 (E) PB 0.3Vp-p(H)


IC808
S VIDEO I/O
IC805
IC811
IC806
IC802
VIDEO SECTION CONTROL
(SERIAL IN PARALLEL OUT)
IC800
VIDEO SECTION CONTROL
(SERIAL IN PARALLEL OUT)
IC801
EVR
IC803
Y LEVEL ADJ
J800
S VIDEO
J801
VIDEO
CNB00
E,AUS,TR model only
E,AUS,TR model only

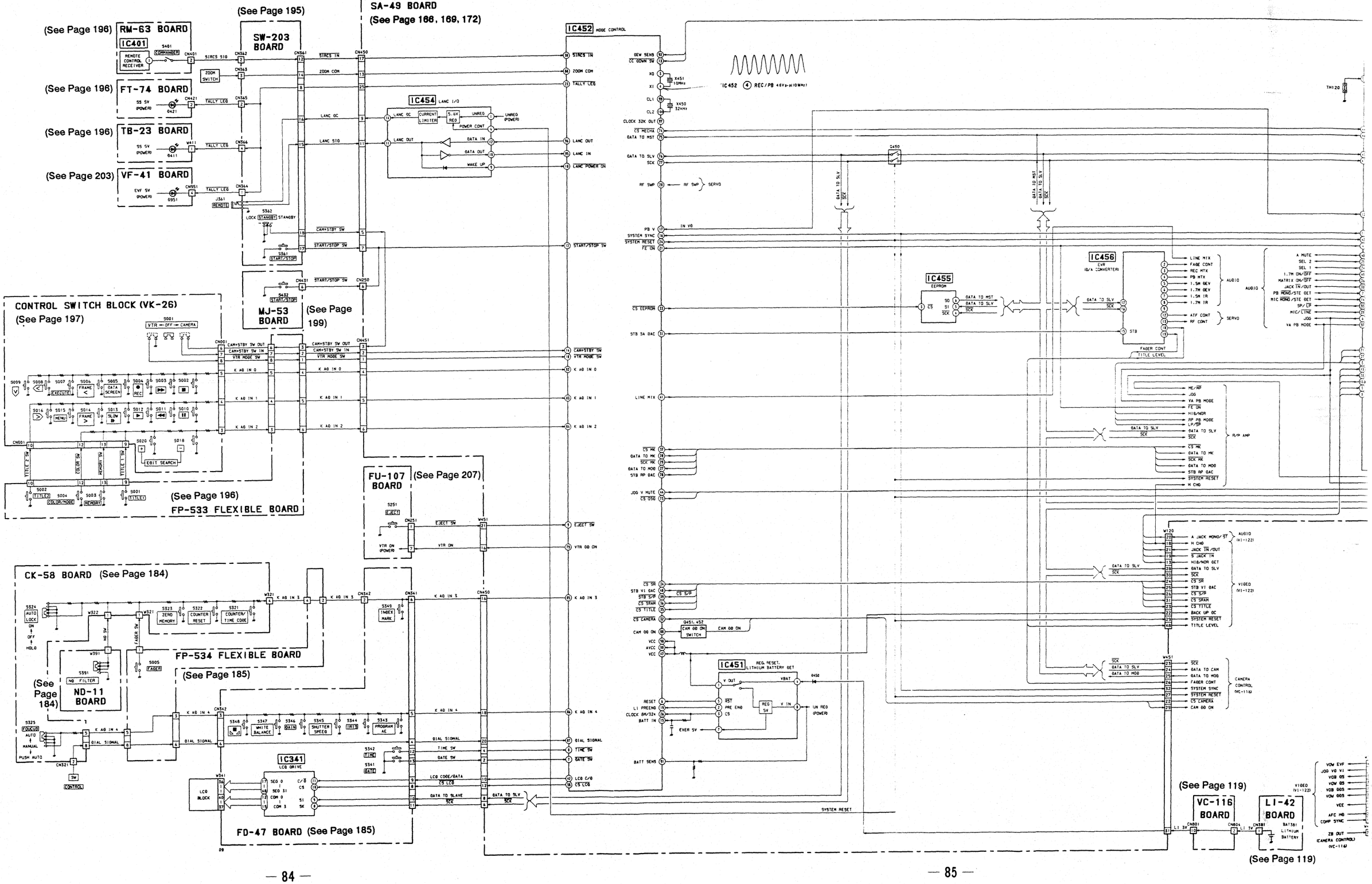
3-7. VIDEO (2) (R/P) BLOCK DIAGRAM




BUMPING
CH1 EQ
RV003
IC004
CH1 AMP
EQ
GCA
CN001
3 (PB RF 1CH)
4 (PB RF)
Q022
BUFFER
PB AFM RF (AU810)
PB RF (SYSCON)
Q025
BUFFER
W120
PB RF V1
HCHG (IC120 (109))
JOG (IC120 (6))
FE ON (IC120 (4))
SYSCON
RV351
PB VCO
IC351
MARKER CONTROL
BUFFER
6dB ATT
CN001
1 (PB RF 1CH)
2 (PB RF 2CH)
IC350
INDEX RF
BUTY
FO ADJ
VCO
LPF
PHASE COMP
PB
REC
FMCK
X2
C
D Q
PCM OUT
Q016
PB PCM BUFFER
Q352
PB PCM AMP
PB RF
LPF
LIMIT1
LIMITER
ME/MP
(CN121 (20) SYSCON)
ME/MP SWITCH
Q353
IC003 (1) REC
0.2V / div
0.1 μsec / div
PCM VOL
HPF
Q350, 351
REC PCM AMP
REC RF
FMDT
PCM CONT
Y VOL
Y CONT
C VOL
C CONT
MODE
AREA
REC AREA
AF REC
PCM REC
RAMP
RFMOD
RFAR
RAR C
RAR A
RAMP
Q004
BUFFER
Q007
C/AFM/ATF MIX AMP
REC AFM RF (AU810)
Q011
ATF LEVEL SWITCH
REC ATF(SERVO)
LP/SP (IC120 (71)) SYSCON
Q017
RP PB MODE (IC120 (3) SYSCON)
IC002
IC001
EVR
(D/A CONVERTER)
REC PCM 2CH
REC PCM 1CH
REC Y 2CH
REC Y 1CH
REC C 2CH
REC C 1H
9·10·11
DR SWP
X CLR
SYSTEM RESET (IC452 (24))
X SCK
SCK MK (IC452 (29))
SO
DATA TO MDB (IC452 (27))
SI
DATA TO MK (IC452 (28))
X CEM
CS MK (IC452 (7))
HSYN
H SYNC (IC401 (35))
RF SW
RF SWP (IC120 (99))
DR SW
SERVO
HPLS
MASK
AFHD
DUB AREA
PCKO
PCKI
X350
11.58MHz
IC351 (32) REC/PB
2.4Vp-p(11.58MHz)
REC Y RF
REC C
REC C CONT
Y OUT LEVEL
C OUT LEVEL
A05
A07
A08
L0
CLK
DI
STB RP DAC (IC452 (78))
SCK (Q450)
DATA TO SLV (Q450)
SYSCOM
RP PB MODE (IC120 (3) SYSCON)
3 5V
VI 5V (W451 (3) (4) POWER)
Q003, 005
Q009, 010, 013
5V
VA PB (IC120 (97) SYSCON)
IC003 (3) REC
0.286Vp-p(H)
VIDEO (V1-122)
Y IN
4FSC
AFC H
FSC
C IN
COMP SYNC
VTR PB
POWER (V1-122)
VI 5V
SS 5V
09


RF SWP (AUDIO)
RF SWP (R/P AMP)
RF SWP (SYSCON)
IC120 (99) REC/PB 4.8Vp-p(2V)
W120
COMP SYNC
VI SWP
VIDEO (VI-122)
(See Page 207)
FU-107 BOARD
IC251 (14) REC/PB 0.62Vp-p(475kHz)
IC121 (1/2) LPF
CURRENT DET
CURRENT LIMIT
LPF (PWM to DC)
5S 5V (POWER)
Q122
0.16V
ICOM (IC121 (15), (17))
Q130 BUFFER
W451
DRUM ERR
CAP ERR
CN251
IC251 (1/2) DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
TRIANGLE OSC
X251 475kHz
MOTOR UNREG (POWER)
Q254 SWITCHING
Q253 SWITCHING
DRUM VS
CAP VS
IC121 (1/2) DRUM MOTOR DRIVE
REF
OVER HEO PRO TECT
VS
STBY
BRAKE
DRUM ON
CAP ON
DRUM FWD/RVS
DRUM BRK
Q120
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
ROTER POSITION DET
U IN
V IN
W IN
LPF
IBSET
ICOM (IC121 (2))
ICOM (15-17)
R149-152 DRUM DRIVE CURRENT SENS
SILENCER
Q121, 128, 129
COM
COM (DRUM)
CN121
W301
CN303
(See Page 181)
CC-74 BOARD
(See Page 182)
MECHA CHASSIS
M901 DRUM MOTOR (1/2)
(See Page 181)
CC-74 BOARD
CN121
CAP VS
W301
W302
VS
M902 CAPSTAN MOTOR (1/2)
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
CPU U
CAP V
CAP W
STBY
POWER OFF
HE POWER
VH+
VH-
C HALL VCC
IC001 (1/2) CAPSTAN MOTOR DRIVE
SS 5V (POWER)
CAP ON
CAP FWD/RVS
CAP FWD/RVS
DRUM ACC
CAP ON
RP PB
PB SP/LP DET
ATF CONT (IC456 (12) SYSCON)
RP PB
SCF CLOCK
BALANCED MOD
16kHz BPF (SCF)
46kHz BPF (SCF)
LPF
FH DET
LPF 2 (SCF)
BUFFER
V REF
LPF
REC ATF (R/P AMP)

3-10. SYSTEM CONTROL BLOCK DIAGRAM



IC452 MODE CONTROL

IC452 (4) REC/PB 4.6Vp-p(10MHz)

IC120 SYSTEM CONTROL

IC123 LOADING MOTOR DRIVE

IC456 EVR (D/A CONVERTER)

IC455 EEPROM

IC451 REG. RESET, LITHIUM BATTERY DET

IC401 CHARACTER GENERATOR CONTROL

IC400 CHARACTER GENERATOR

IC301 (1/2) WAVE SHAPER

IC402 HD SELECT

(See Page 182)
MECHA CHASSIS

FP-442 FLEXIBLE BOARD

(See Page 182)
LS-33 BOARD

(See Page 181)
CC-74 BOARD

(See Page 119)
VC-116 BOARD

(See Page 119)
LI-42 BOARD

3-11. INTERFACE

3-11-1. System Control – Video/Audio Block Interface (SA-49 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{LP}$	O	IC120 ㉝	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	H	H
VA PB MODE	O	IC120 ㊲	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC120 ㊽	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC120 ㉒	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
MIC/$\overline{LINE}$	O	IC120 ㉘	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC120 ⑤	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC120 ③	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{FE\ ON}$	O	IC120 ④	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC120 ㊾	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC120 ⑥	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
$\overline{CS\ SR}$	O	IC452 ㉔	V period "L" pulse																					
$\overline{STB\ VI\ DAC}$	O	IC452 ㊵	V period 'H" pulse																					
DATA TO MSTR	I	IC452 ㉕	V period "L" pulse																					
DATA TO SLVE	O	IC452 ㉖	V period pulse train																					
$\overline{SCK}$	O	IC452 ㉗	V period "L" pulse																					
PB SP/$\overline{LP}$ DET	I	IC120 ㊼	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG DET	I	IC120 ㊹	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
COMP SYNC	I	IC120 ㊸	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12
COMP REC	O	IC120 ㉞	*16	*16	*16	L	L	L	L	L	L	L	L	L	L	L	*16	*16	L	L	L	L	L	L

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. E, Australian, Tourist model only.
*5. False VD signal
*6. By REC MODE switch. "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.
*16. "L" when a plug is inserted in S VIDEO terminal. "H" when others.

3-11-2. System Control – Servo Block Interface

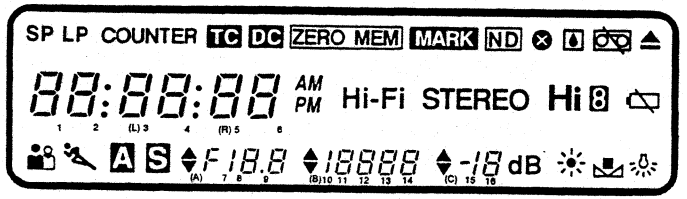
NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *12		REC *13	REC *13 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC120⑫	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC120⑪	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC120⑩	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC120⑨	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC120⑭	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC120⑩, ⑰	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC120①	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC120⑧	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC120③	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM FWD/$\overline{RVS}$ *10	O	IC120⑤	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{RVS}$	O	IC120②	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC120⑯	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC120⑮	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{LM\ LIM\ CONT}$ *11	O	IC120㉓	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON	O	IC120⑬	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
DRUM ACC	O	IC120⑪	L	L	L	L	L	L	L	L	L	L	*8	L	L	L	L	L	L	L	L	L	L	L
DRUM BRK	O	IC120⑫	L	L	L	L	L	L	L	L	L	L	*8	L	L	L	L	L	L	L	L	L	L	L

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.024 kHz, f2=117.188 kHz, f3=162.760 kHz and f4=146.484 kHz
*7. f2 (117.188 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. Edit search button pressed when playback pause mode.
*13. E, Australian, Tourist model only.

LCD Port Layout

	COM. 0	COM. 1	COM. 2	COM. 3
0	Hi8	: (R)	. (R)	| (7)
1	ZERO MEM	AM	PM	▲ (B)
2	ND	MARK	Hi-Fi STEREO	| (10)
3	LP	SP		
4	1f	1g	1e	1d
5	1a	1b	1c	A
6	2f	2g	2e	2d
7	2a	2b	2c	S
8	3f	3g	3e	3d
9	3a	3b	3c	▲ (A)
10	4f	4g	4e	4d
11	4a	4b	4c	F
12	5f	5g	5e	5d
13	5a	5b	5c	TC
14	6f	6g	6e	6d
15	6a	6b	6c	DC
16	8f	8g	8e	8d
17	8a	8b	8c	. (8)
18	9f	9g	9e	9d
19	9a	9b	9c	
20	11f	11g	11e	11d
21	11a	11b	11c	
22	12f	12g	12e	12d
23	12a	12b	12c	
24	13f	13g	13e	13d
25	13a	13b	13c	
26			14a, f	
27			14e	14b, e
28	15g	15b, c	14c, d	▲ (C)
29	16f	16g	16e	16d
30	16a	16b	16c	dB
31	COUNTER	: (L)	. (L)	▲

a f b e c d



Audio matrix control signal

REC mode

Mode	AUDIO MATRIX CONTROL SIGNAL			RECORDING SIGNAL	
	MAT ON/OFF (IC120 ㉘)	MAT SEL 1 (IC120 ㉔)	MAT SEL 2 (IC120 ㉙)	REC AFM 1.5 MHz	REC AFM 1.7 MHz
MONO *1	L	L	H	MONO	— *2
STEREO	H	—	—	$\frac{L+R}{2}$	$\frac{L-R}{2}$

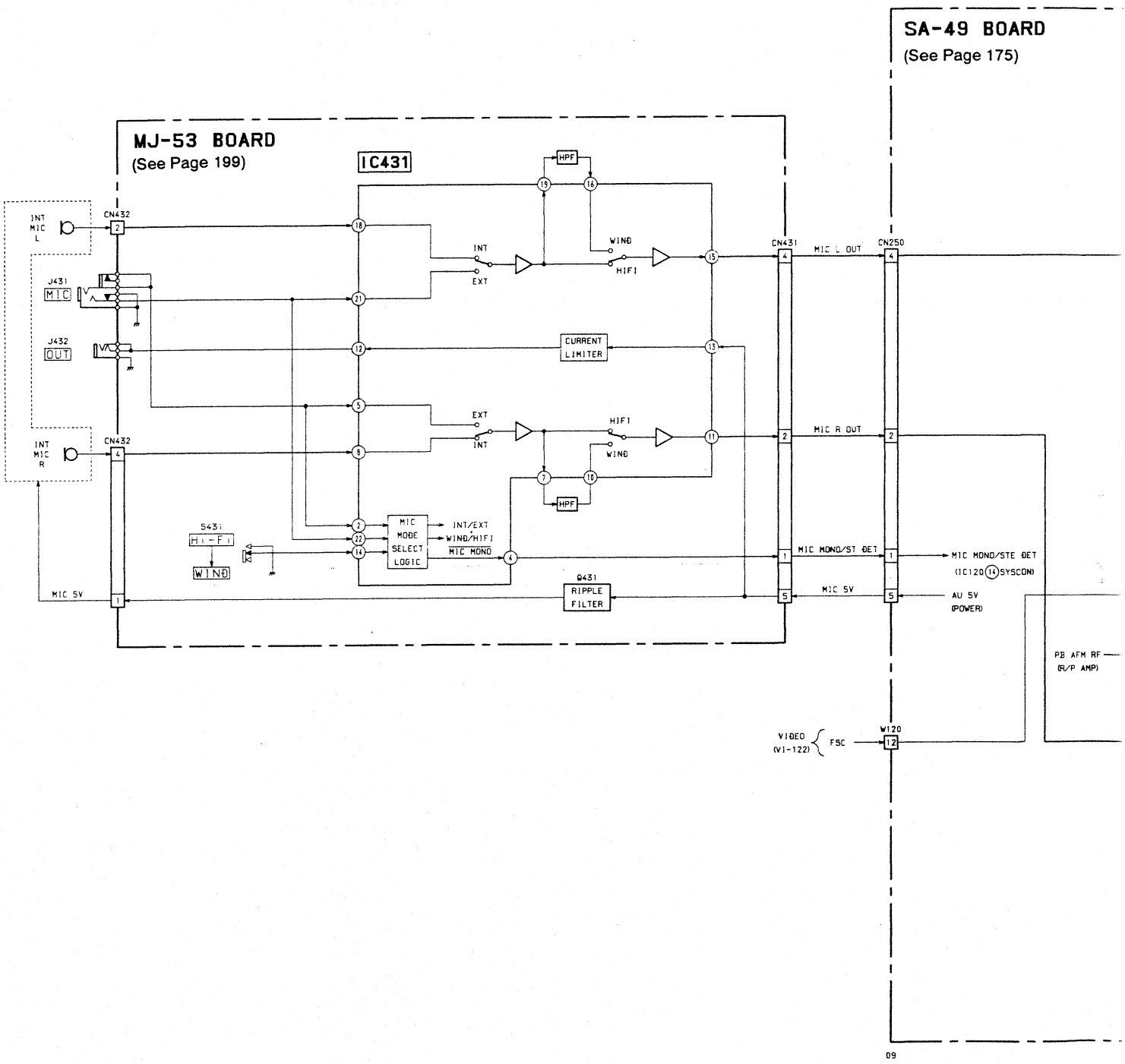
*1. When the monaural mic is connected to the external mic jack (CAMERA mode) or when the plug is not inserted in the AUDIO IN R terminal. (VTR mode).

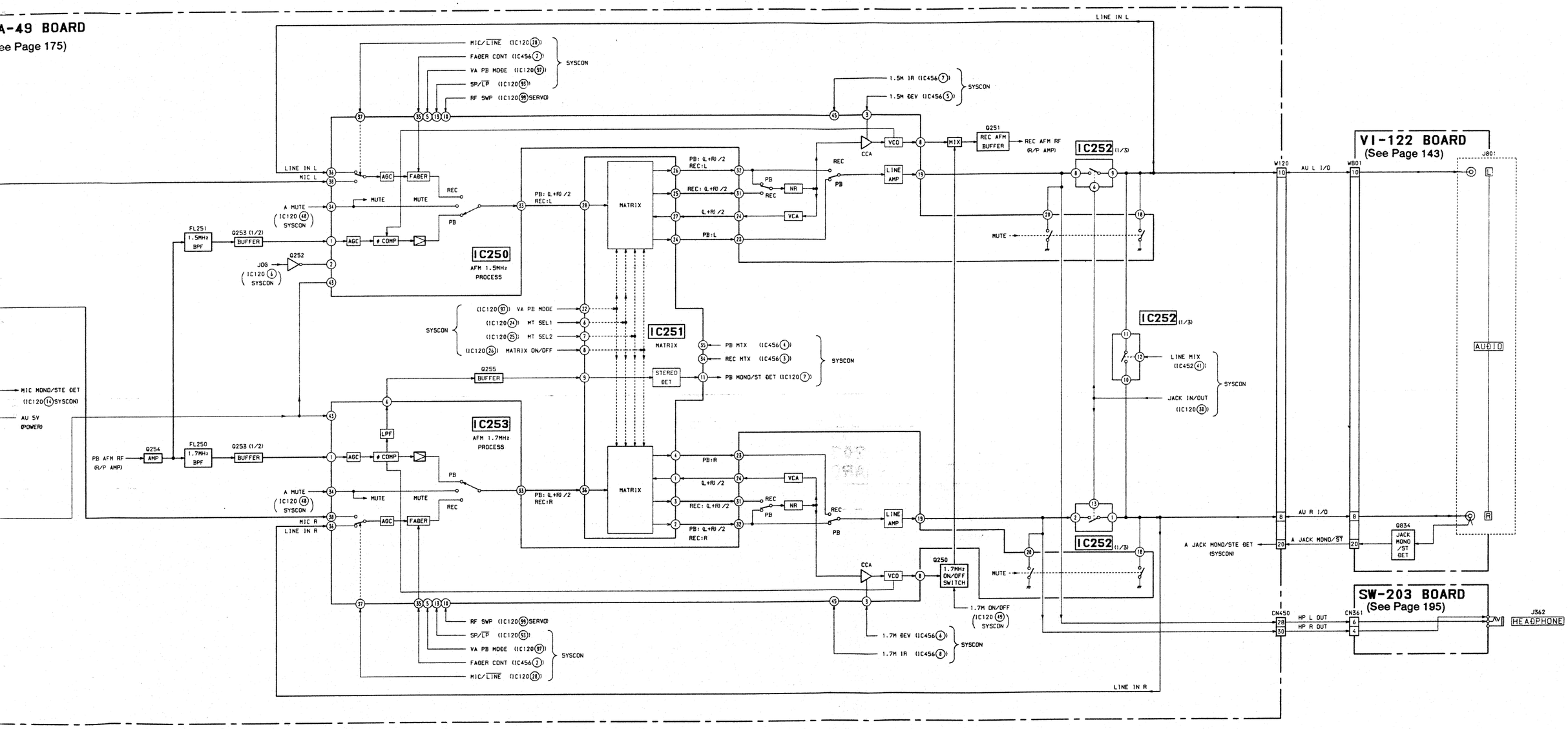
*2. The "1.7M $\overline{\text{ON/OFF}}$" signal of Pin ㊾ of IC120 becomes "H" and the REC AFM 1.7 MHz signal will not be recorded.

PB mode

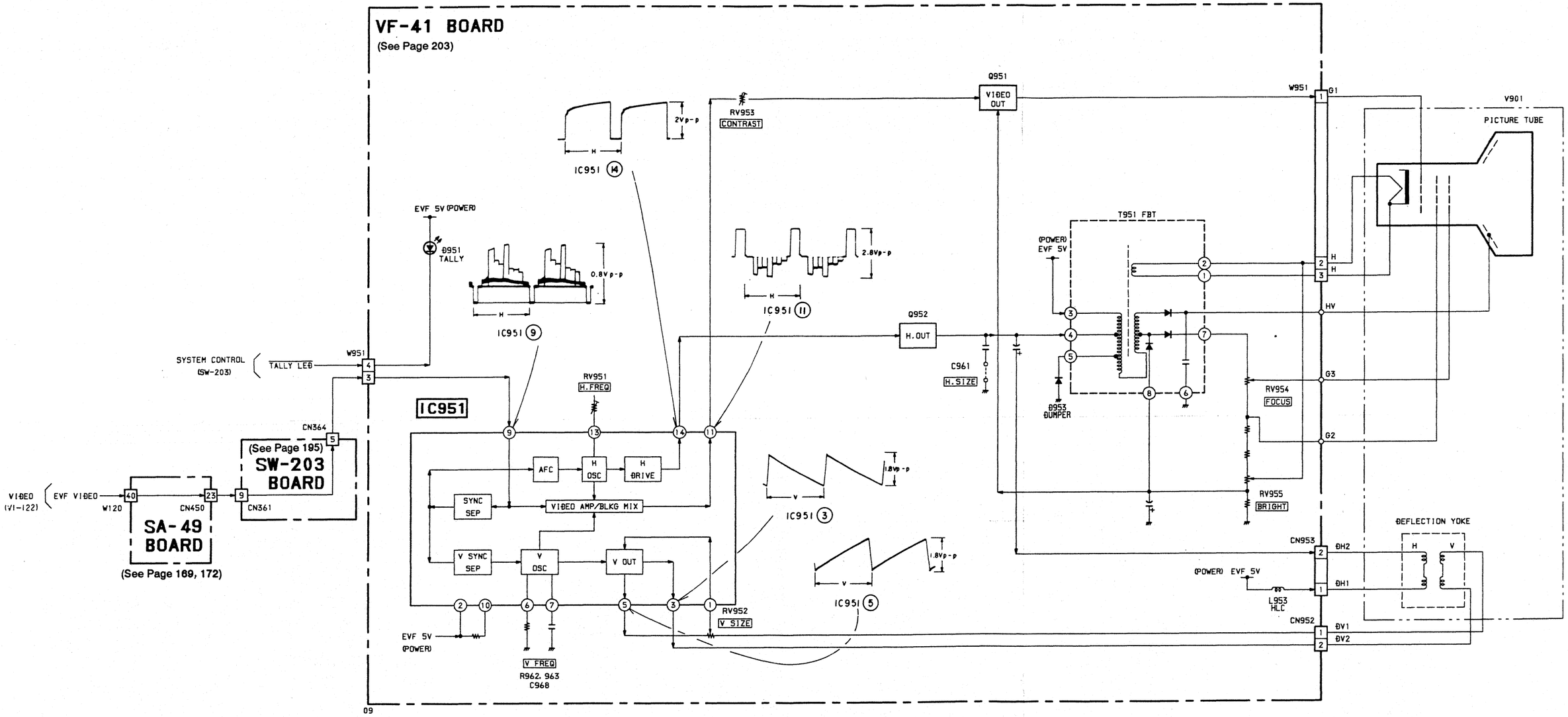
PLAYBACK TAPE	MENU SCREEN	AUDIO MATRIX CONTROL SIGNAL			PLAYBACK SIGNAL	
		MAT ON/OFF (IC120 ㉘)	MAT SEL 1 (IC120 ㉔)	MAT SEL 2 (IC120 ㉙)	L	R
MONO		L	L	H	MONO	MONO
STEREO		H	L	L	L	R
BILINGUAL	MAIN + SUB	H	L	L	MAIN + SUB	MAIN + SUB
	MAIN	L	L	H	MAIN	MAIN
	SUB	L	H	L	SUB	SUB

3-12. AUDIO BLOCK DIAGRAM

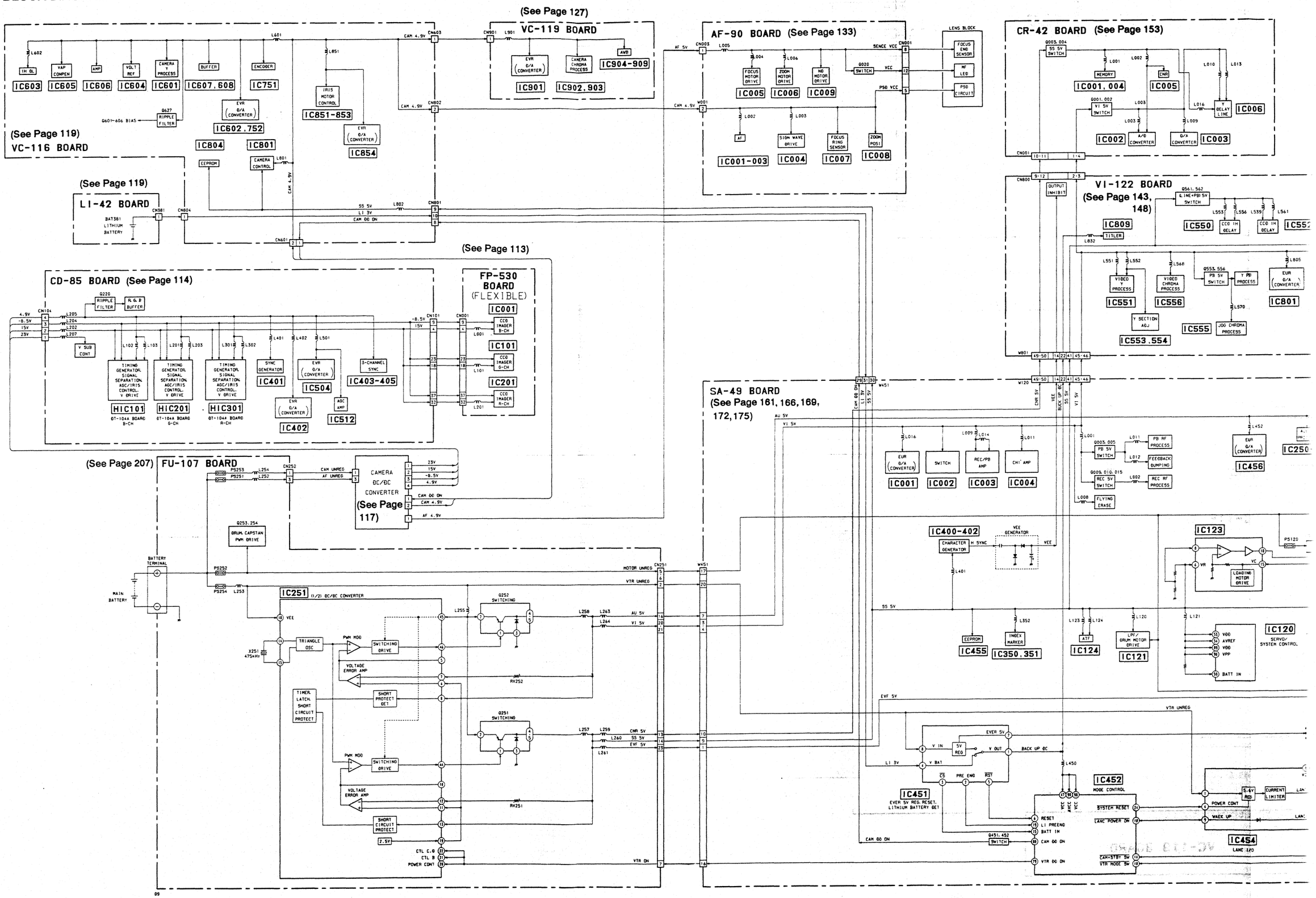


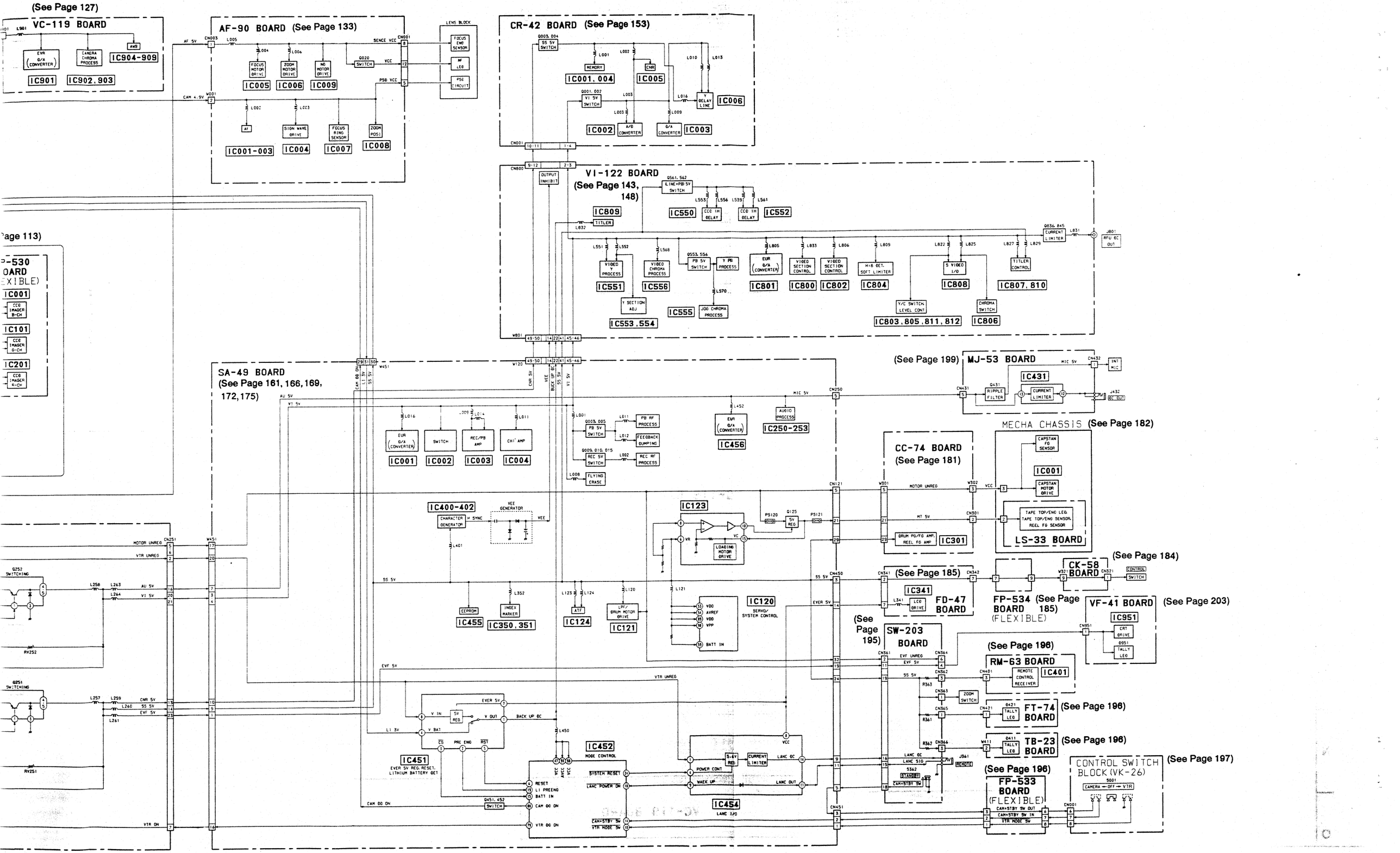

A-49 BOARD
(See Page 175)
LINE IN L
MIC/LINE (IC120 28)
FADER CONT (IC456 7)
VA PB MODE (IC120 97)
SP/LP (IC120 93)
RF SWP (IC120 99 SERVO)
SYSCON
1.5M IR (IC456 7)
1.5M DEV (IC456 5)
LINE IN L
MIC L
AGC
FADER
REC
PB
MUTE
A MUTE (IC120 48 SYSCON)
FL251 1.5MHz BPF
Q253 (1/2) BUFFER
JOG (IC120 4 SYSCON)
Q252
COMP
IC250 AFM 1.5MHz PROCESS
PB: (L+R)/2 REC:L
REC: (L+R)/2
(L+R)/2
PB:L
MATRIX
NR
VCA
LINE AMP
CCA
VCO
MIX
Q251 REC AFM BUFFER
REC AFM RF (R/P AMP)
IC252 (1/3)
W120
AU L I/O
W801
VI-122 BOARD
(See Page 143)
J801
L
AUDIO
IC251 MATRIX
(IC120 97) VA PB MODE
(IC120 24) MT SEL1
(IC120 25) MT SEL2
(IC120 26) MATRIX ON/OFF
PB MTX (IC456 4)
REC MTX (IC456 3)
PB MONO/ST DET (IC120 7)
STEREO DET
Q255 BUFFER
LINE MIX (IC452 41)
JACK IN/OUT (IC120 36)
MIC MONO/STE DET (IC120 14 SYSCON)
AU 5V (POWER)
IC253 AFM 1.7MHz PROCESS
LPF
Q254 AMP
FL250 1.7MHz BPF
PB AFM RF (R/P AMP)
PB: (L+R)/2 REC:R
PB:R
REC: (L+R)/2
MIC R
LINE IN R
AU R I/O
A JACK MONO/STE DET (SYSCON)
A JACK MONO/ST
Q834 JACK MONO /ST DET
R
Q250 1.7MHz ON/OFF SWITCH
1.7M ON/OFF (IC120 49 SYSCON)
1.7M DEV (IC456 6)
1.7M IR (IC456 8)
SW-203 BOARD
(See Page 195)
CN450
CN361
HP L OUT
HP R OUT
J362
HEADPHONE
LINE IN R

3-13. EVF BLOCK DIAGRAM



3-14. POWER BLOCK DIAGRAM

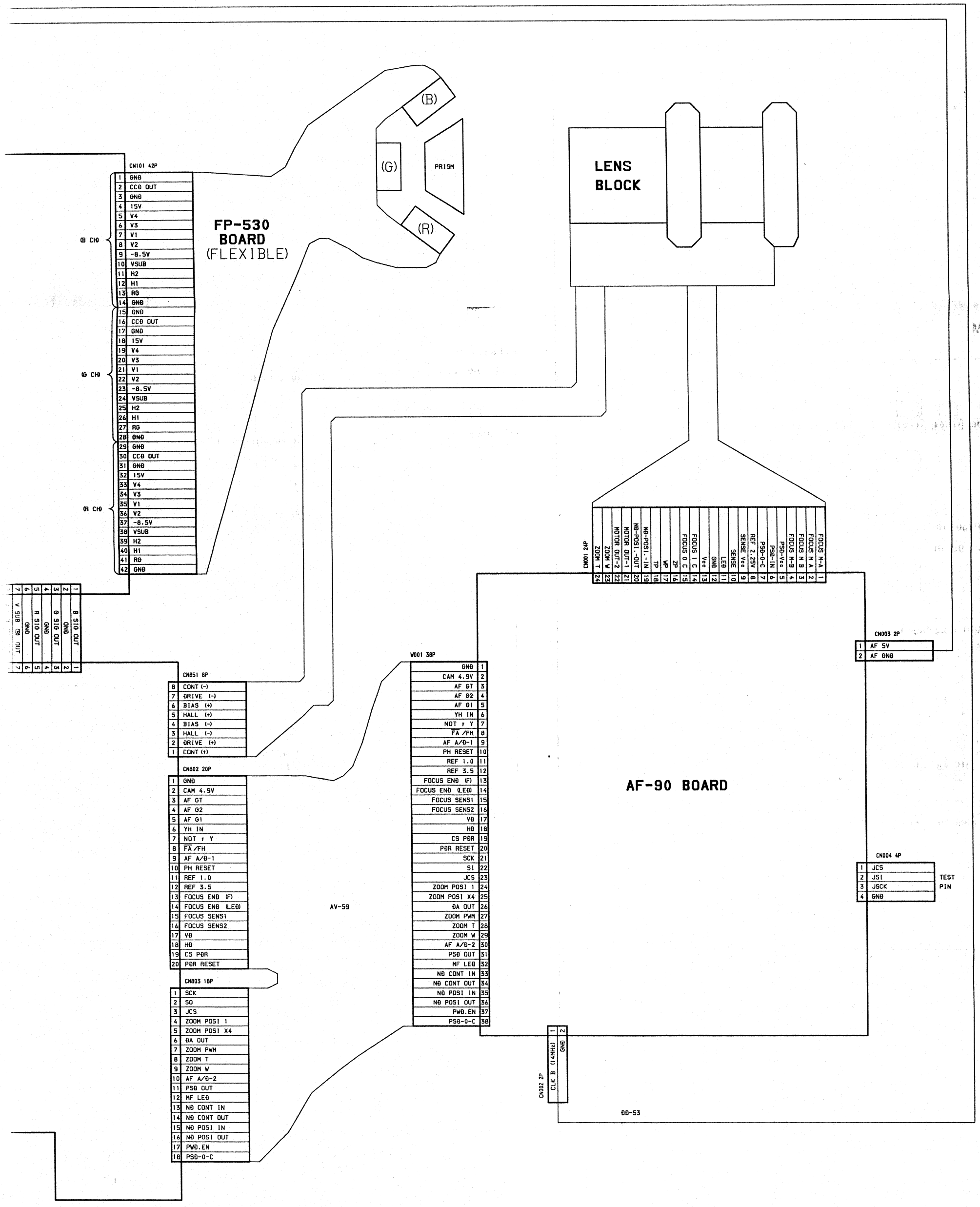



(See Page 127)
VC-119 BOARD
EVR D/A CONVERTER
CAMERA CHROMA PROCESS
AWB
IC901
IC902, 903
IC904-909
AF-90 BOARD (See Page 133)
AF 5V
CN003
L005
SENCE VCC
CN001
Q020 SWITCH
VCC
PSD VCC
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
IRIS MOTOR DRIVE
IC005
IC006
IC009
CAM 4.9V
W001
AF
SIGN WAVE DRIVE
FOCUS RING SENSOR
ZOOM POSI
IC001-003
IC004
IC007
IC008
LENS BLOCK
FOCUS END SENSOR
NF LED
PSD CIRCUIT
CR-42 BOARD (See Page 153)
Q003, 004 5S 5V SWITCH
MEMORY
CNR
IC001, 004
IC005
Q001, 002 V1 5V SWITCH
A/D CONVERTER
D/A CONVERTER
Y DELAY LINE
IC002
IC003
IC006
CN001
VI-122 BOARD (See Page 143, 148)
CN800
OUTPUT INHIBIT
Q561, 562 C.LINE+PB 5V SWITCH
CCD 1H DELAY
IC809
IC550
IC552
TITLER
Q836, 845 CURRENT LIMITER
J801 RFU DC OUT
VIDEO Y PROCESS
VIDEO CHROMA PROCESS
Q553, 556 PB 5V SWITCH
Y PB PROCESS
EUR D/A CONVERTER
VIDEO SECTION CONTROL
H16 DET, SOFT LIMITER
S VIDEO I/O
TITLER CONTROL
Y SECTION ADJ
JOG CHROMA PROCESS
Y/C SWITCH, LEVEL CONT
CHROMA SWITCH
IC551
IC556
IC555
IC801
IC800
IC802
IC804
IC808
IC807, 810
IC553, 554
IC803, 805, 811, 812
IC806
W801
SA-49 BOARD (See Page 161, 166, 169, 172, 175)
W120
W451
CAM 8D ON
L1 3V
5S 5V
CNR 5V
VEE
BACK UP DC
V1 5V
AU 5V
MIC 5V
CN250
EUR D/A CONVERTER
SWITCH
REC/PB AMP
CH1 AMP
PB RF PROCESS
FEEDBACK DUMPING
REC RF PROCESS
REC 5V SWITCH
FLYING ERASE
AUDIO PROCESS
IC001
IC002
IC003
IC004
IC456
IC250-253
(See Page 199) MJ-53 BOARD
MIC 5V
CN432
INT MIC
IC431
CN431
G431 RIPPLE FILTER
CURRENT LIMITER
J432 DC OUT
MECHA CHASSIS (See Page 182)
CC-74 BOARD (See Page 181)
CAPSTAN FG SENSOR
IC001
CAPSTAN MOTOR DRIVE
TAPE TOP/END LED
TAPE TOP/END SENSOR, REEL FG SENSOR
LS-33 BOARD
MOTOR UNREG
MT 5V
DRUM PG/FG AMP, REEL FG AMP
IC301
IC400-402
CHARACTER GENERATOR
H SYNC
VEE GENERATOR
VEE
L401
IC123
PS120
Q125 5V REG
PS121
LOADING MOTOR DRIVE
CN121
CN450
W301
W302
VCC
CN301
EEPROM
INDEX MARKER
IC455
IC350, 351
ATF
IC124
LPF/ DRUM MOTOR DRIVE
IC121
IC120 SERVO/ SYSTEM CONTROL
VDD
AVREF
VDD
VPP
BATT IN
5S 5V
EVF 5V
(See Page 185)
IC341
LED DRIVE
FD-47 BOARD
CN341
CN342
(See Page 184)
CK-58 BOARD
CONTROL SWITCH
FP-534 (See Page 185) BOARD (FLEXIBLE)
VF-41 BOARD (See Page 203)
IC951
CRT DRIVE
D951 TALLY LED
CN951
(See Page 195) SW-203 BOARD
CN361
CN364
EVF UNREG
EVF 5V
5S 5V
CN362
CN363
CN365
CN366
R363
R361
R362
ZOOM SWITCH
(See Page 196) RM-63 BOARD
CN401
REMOTE CONTROL RECEIVER
IC401
(See Page 196) FT-74 BOARD
CN421
D421 TALLY LED
(See Page 196) TB-23 BOARD
W411
D411 TALLY LED
LANC DC
LANC SIG
5342 STANDBY
CAM+STBY SW
J341 REMOTE
(See Page 196) FP-533 BOARD (FLEXIBLE)
CAM+STBY SW OUT
CAM+STBY SW IN
VTR MODE SW
CN451
CONTROL SWITCH BLOCK (VK-26)
S001
CAMERA — OFF — VTR
CN001
(See Page 197)
Page 113)
C-530 BOARD (FLEXIBLE)
IC001
CCD IMAGER B-CH
IC101
CCD IMAGER G-CH
IC201
CCD IMAGER R-CH
MOTOR UNREG
VTR UNREG
CN251
Q252 SWITCHING
L258
L263
L264
AU 5V
V1 5V
RV252
Q251 SWITCHING
L257
L259
L260
L261
CNR 5V
5S 5V
EVF 5V
RV251
VTR ON
EVF 5V
VTR UNREG
V IN
5V REG
V OUT
BACK UP DC
V BAT
L1 3V
CS
PRE END
RST
IC451
EVER 5V REG, RESET, LITHIUM BATTERY DET
L450
IC452
MODE CONTROL
RESET
L1 PREEND
BATT IN
CAM DD ON
VTR DD ON
Q451, 452 SWITCH
CAM DD ON
SYSTEM RESET
LANC POWER ON
CAM+STBY SW
VTR MODE SW
IC454
LANC I/O
POWER CONT
WAKE UP
5.6V REG
CURRENT LIMITER
LANC DC
LANC OUT
VCC

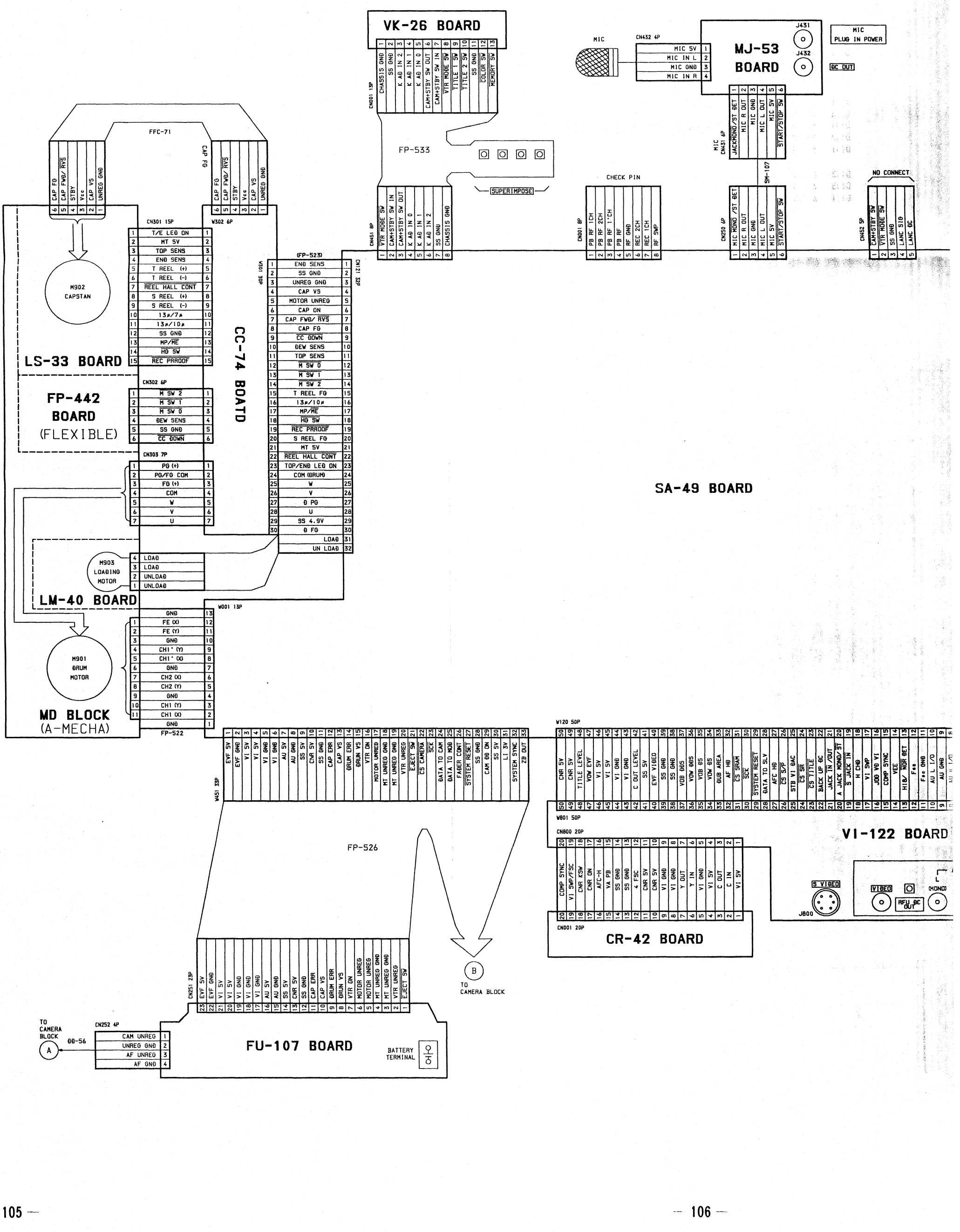
SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

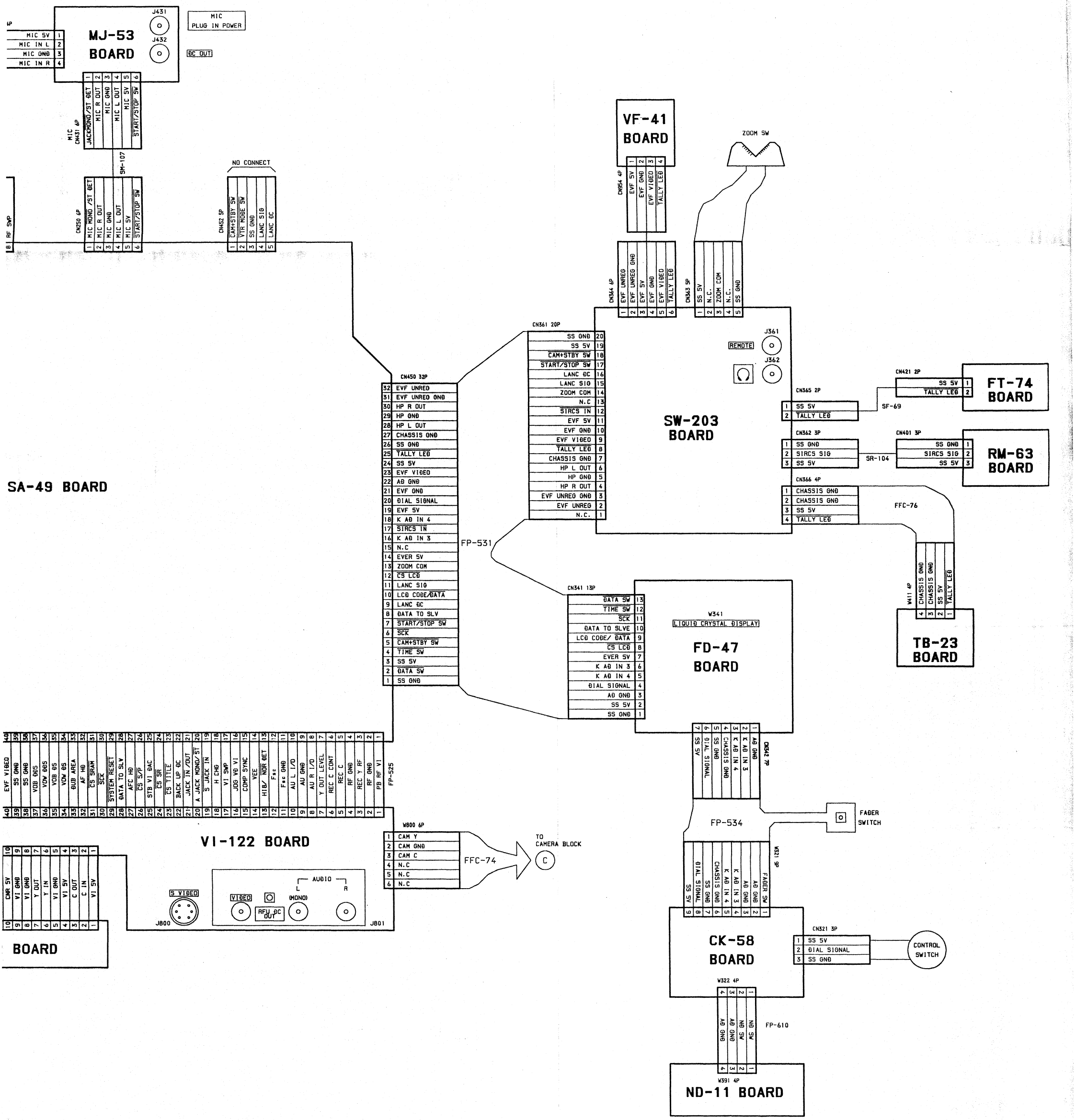
FRAME SCHEMATIC DIAGRAM (CAMERA)


CN101 42P
1 GND
2 CCD OUT
3 GND
4 15V
5 V4
6 V3
7 V1
8 V2
9 -8.5V
10 VSUB
11 H2
12 H1
13 RG
14 GND
15 GND
16 CCD OUT
17 GND
18 15V
19 V4
20 V3
21 V1
22 V2
23 -8.5V
24 VSUB
25 H2
26 H1
27 RG
28 GND
29 GND
30 CCD OUT
31 GND
32 15V
33 V4
34 V3
35 V1
36 V2
37 -8.5V
38 VSUB
39 H2
40 H1
41 RG
42 GND
B CH
G CH
R CH
FP-530
BOARD
(FLEXIBLE)
(B)
(G)
(R)
PRISM
LENS
BLOCK
CN001 24P
1 FOCUS M-A
2 FOCUS M A
3 FOCUS M B
4 FOCUS M-B
5 PSD-Vcc
6 PSD-IN
7 PSD-O-C
8 REF 2.25V
9 SENSE Vcc
10 SENSE
11 LED
12 GND
13 Vcc
14 FOCUS I C
15 FOCUS O C
16 ZP
17 WP
18 TP
19 ND-POSI.-IN
20 ND-POSI.-OUT
21 MOTOR OUT-1
22 MOTOR OUT-2
23 ZOOM W
24 ZOOM T
CN003 2P
1 AF 5V
2 AF GND
CN851 8P
8 CONT (-)
7 DRIVE (-)
6 BIAS (+)
5 HALL (+)
4 BIAS (-)
3 HALL (-)
2 DRIVE (+)
1 CONT (+)
CN802 20P
1 GND
2 CAM 4.9V
3 AF GT
4 AF G2
5 AF G1
6 YH IN
7 NOT r Y
8 FA/FH
9 AF A/D-1
10 PH RESET
11 REF 1.0
12 REF 3.5
13 FOCUS END (F)
14 FOCUS END (LED)
15 FOCUS SENS1
16 FOCUS SENS2
17 VD
18 HD
19 CS PDR
20 PDR RESET
CN803 18P
1 SCK
2 SO
3 JCS
4 ZOOM POSI 1
5 ZOOM POSI X4
6 DA OUT
7 ZOOM PWM
8 ZOOM T
9 ZOOM W
10 AF A/D-2
11 PSD OUT
12 MF LED
13 ND CONT IN
14 ND CONT OUT
15 ND POSI IN
16 ND POSI OUT
17 PWD.EN
18 PSD-O-C
W001 38P
GND 1
CAM 4.9V 2
AF GT 3
AF G2 4
AF G1 5
YH IN 6
NOT r Y 7
FA/FH 8
AF A/D-1 9
PH RESET 10
REF 1.0 11
REF 3.5 12
FOCUS END (F) 13
FOCUS END (LED) 14
FOCUS SENS1 15
FOCUS SENS2 16
VD 17
HD 18
CS PDR 19
PDR RESET 20
SCK 21
SI 22
JCS 23
ZOOM POSI 1 24
ZOOM POSI X4 25
DA OUT 26
ZOOM PWM 27
ZOOM T 28
ZOOM W 29
AF A/D-2 30
PSD OUT 31
MF LED 32
ND CONT IN 33
ND CONT OUT 34
ND POSI IN 35
ND POSI OUT 36
PWD.EN 37
PSD-O-C 38
AF-90 BOARD
CN004 4P
1 JCS
2 JSI
3 JSCK
4 GND
TEST
PIN
CN002 2P
1 CLK B (14MHz)
2 GND
AV-59
DD-53

FRAME SCHEMATIC DIAGRAM (VIDEO)



9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▒▒ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through holes are not indicated.

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms.
  Chip resistor are 1/8W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repeair.*
- —— : B+ Line.*
- - - - : B- Line.*
- : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

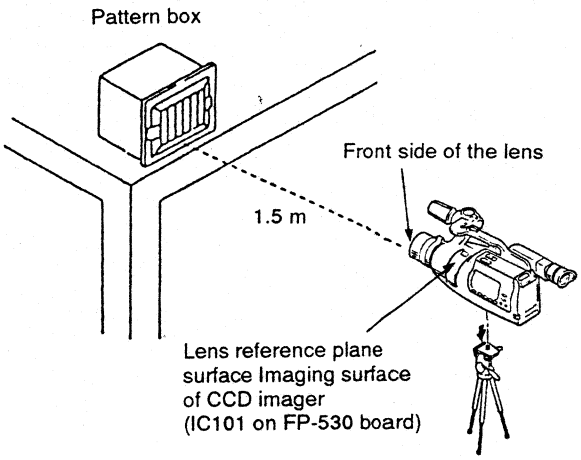
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC MODE)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

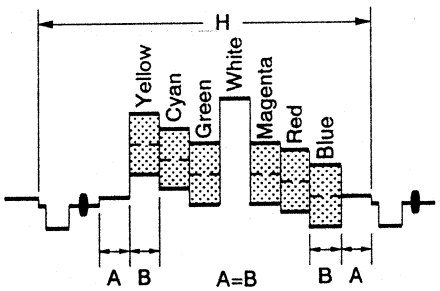


Fig. a (Video output terminal output waveform)

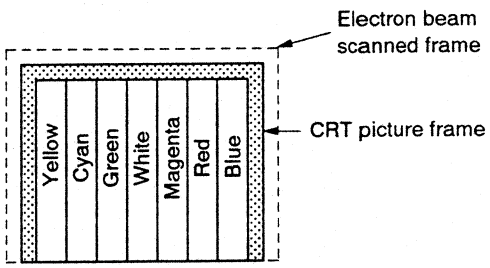


Fig. b (Picture on monitor TV)

(VTR REC, VTR PB MODE)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

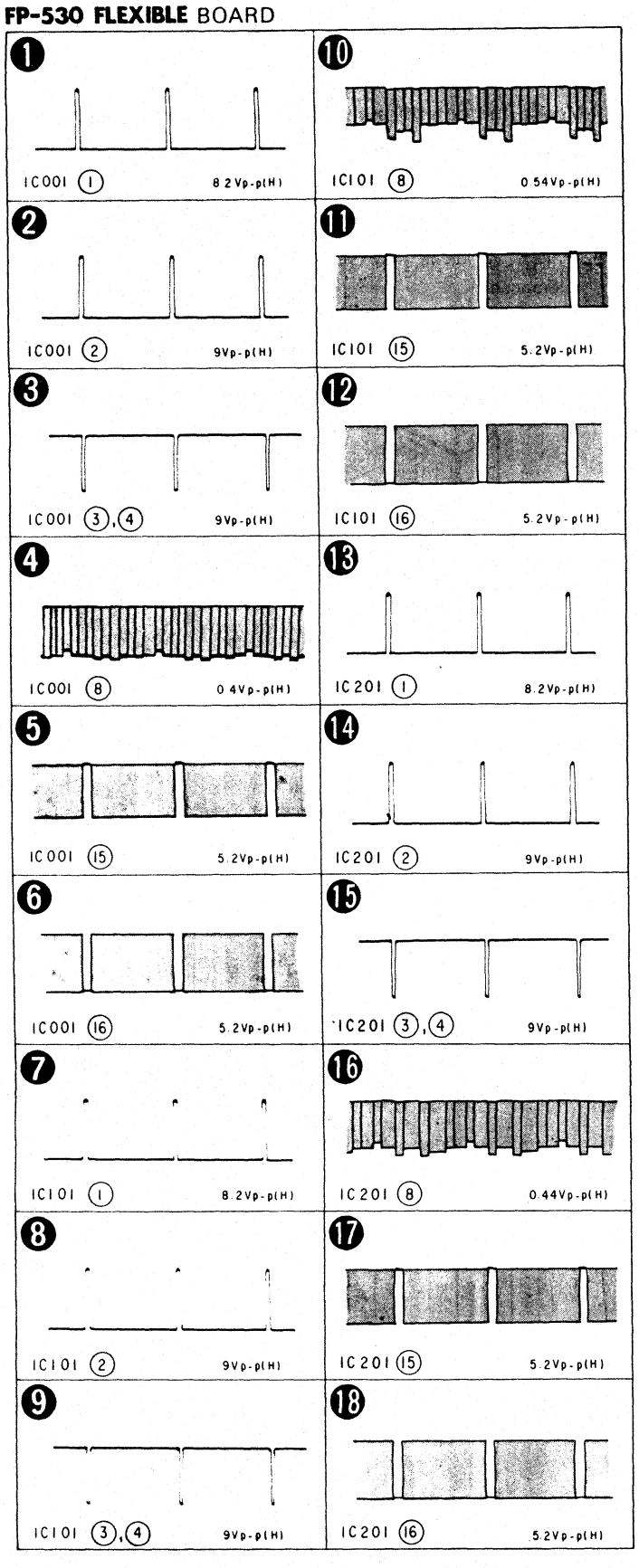
FP-530 (CCD IMAGER), CD-85 (CAMERA) PRINTED WIRING BOARDS

— Ref. No. FP-530 BOARD: 1000 series, CD-85 BOARD: 2000 series —

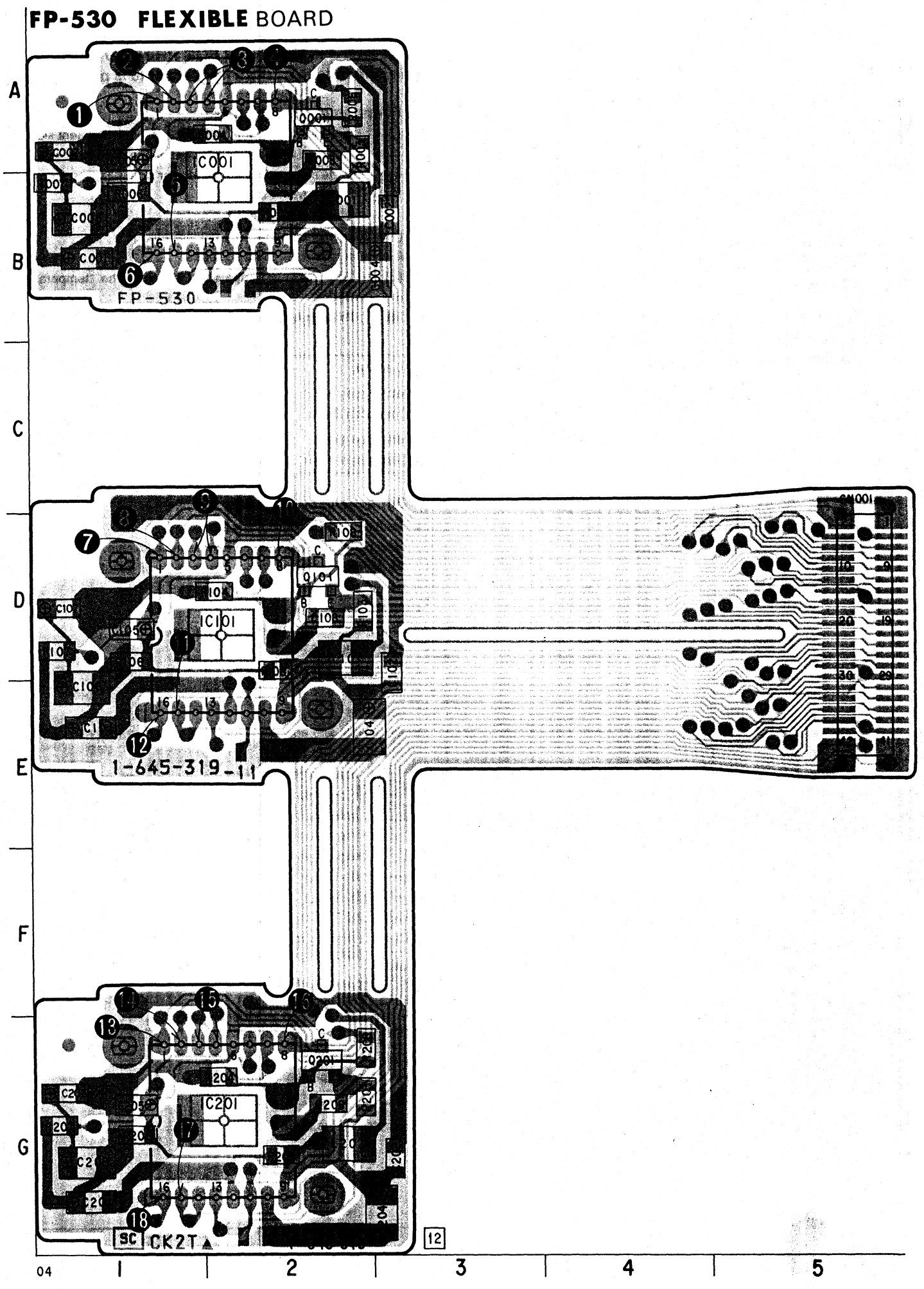
< TRANSISTOR >

Q001	8-729-012-35	TRANSISTOR	2SK711-BL
Q101	8-729-012-35	TRANSISTOR	2SK711-BL
Q201	8-729-012-35	TRANSISTOR	2SK711-BL

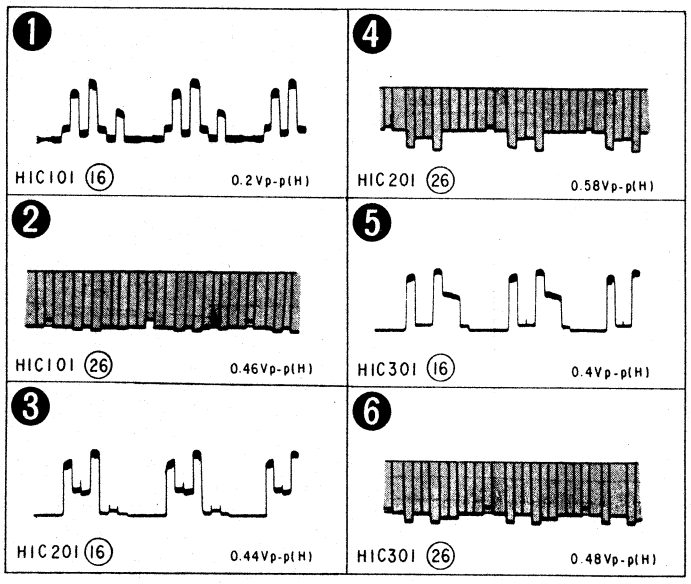
FP-530 FLEXIBLE BOARD



FP-530 FLEXIBLE BOARD



CD-85 BOARD

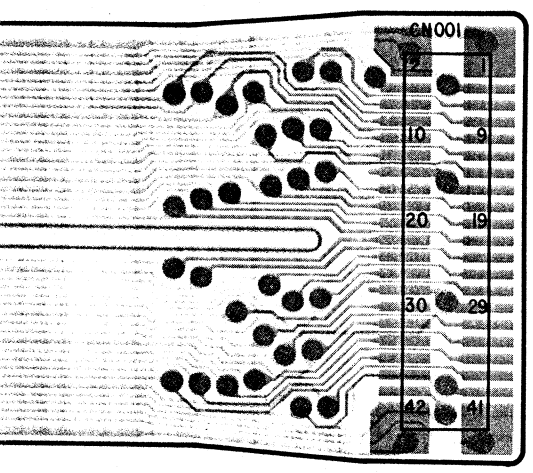


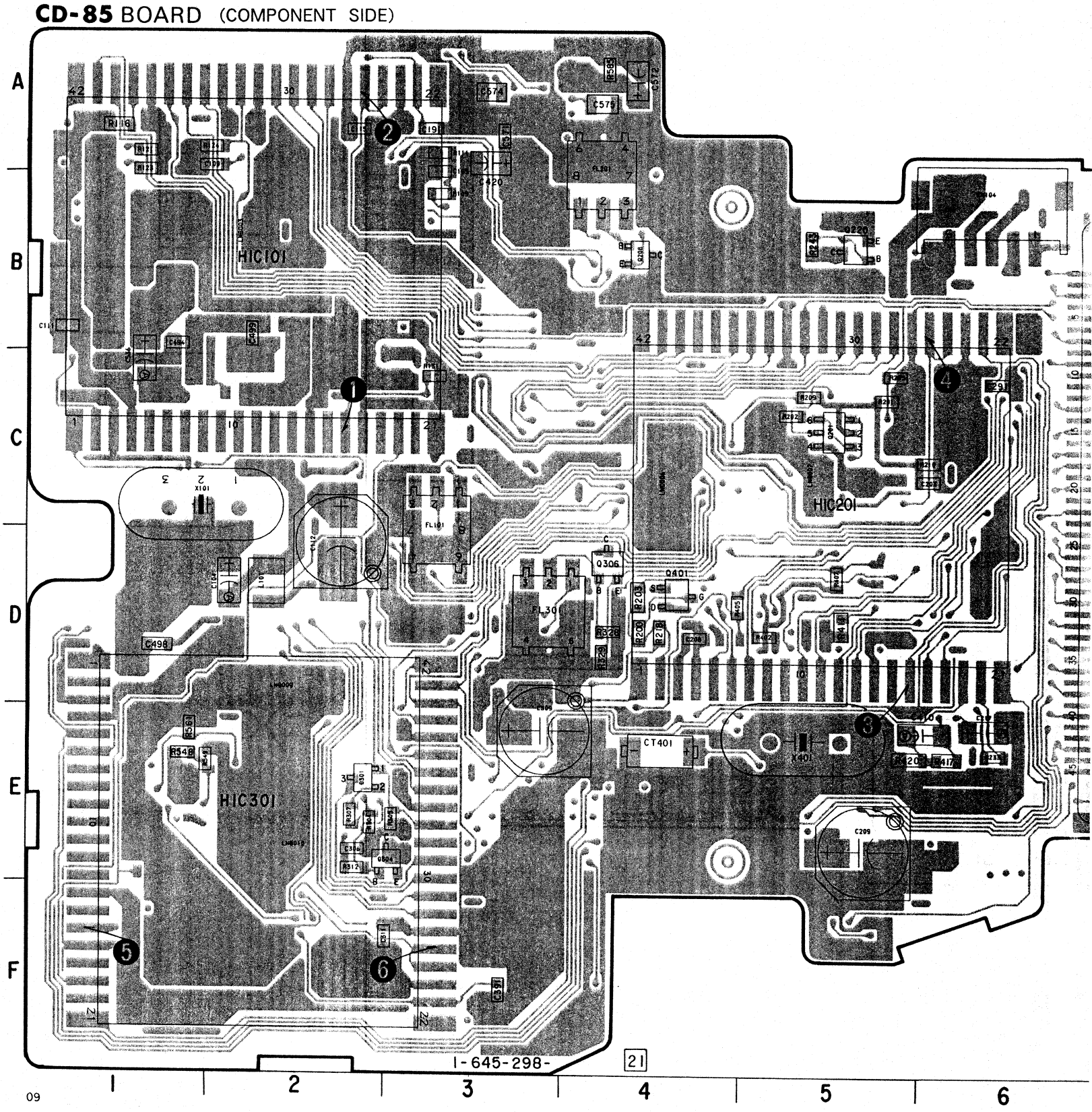
< DIODE >

D101	8-719-820-05	DIODE	1SS181
D103	8-719-404-46	DIODE	MA110
D201	8-719-820-05	DIODE	1SS181
D203	8-719-404-46	DIODE	MA110
D205	8-719-404-46	DIODE	MA110
D301	8-719-820-05	DIODE	1SS181
D303	8-719-404-46	DIODE	MA110
D401	8-719-404-46	DIODE	MA110
D402	8-719-949-46	DIODE	1T32
D491	8-719-800-76	DIODE	1SS226
D492	8-719-800-76	DIODE	1SS226
D493	8-719-800-76	DIODE	1SS226
D494	8-719-800-76	DIODE	1SS226

IC40
IC40
IC40
IC40
IC40
IC50
IC51
IC57

CD-85 BOARD (COMPONENT SIDE)





›

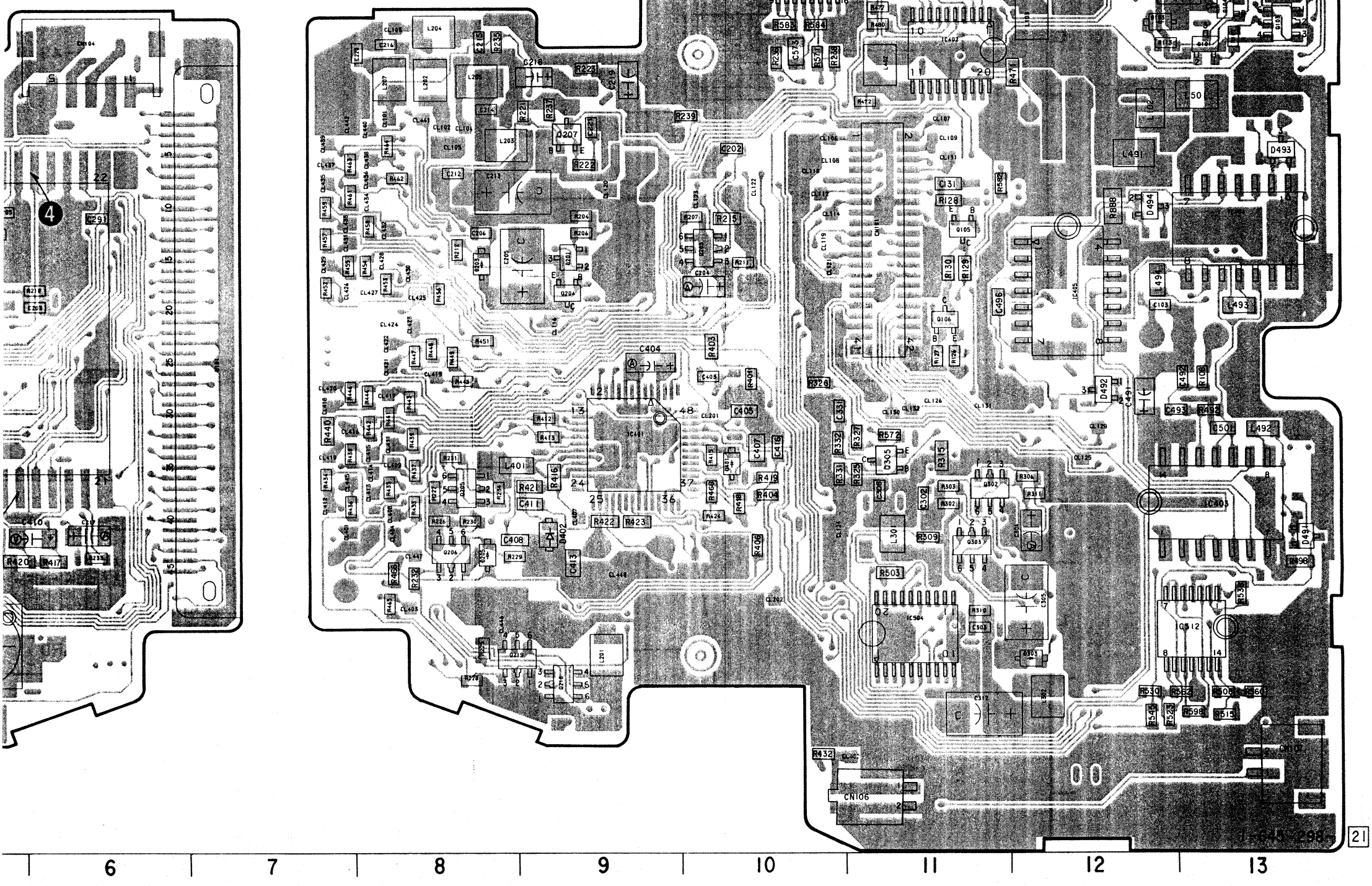
< IC >

1SS181	IC401	8-752-339-77	IC	CXD2111R
MA110	IC402	8-759-064-36	IC	MB88346BPFV
1SS181	IC403	8-759-036-17	IC	MC74AC00M
MA110	IC404	8-759-036-17	IC	MC74AC00M
MA110	IC405	8-759-038-64	IC	MC74AC74M
1SS181	IC504	8-759-064-36	IC	MB88346BPFV
MA110	IC512	8-759-059-03	IC	LM324PW
MA110	IC571	8-759-066-59	IC	TC74HC4053AFS
1T32				
1SS226				
1SS226				
1SS226				
1SS226				

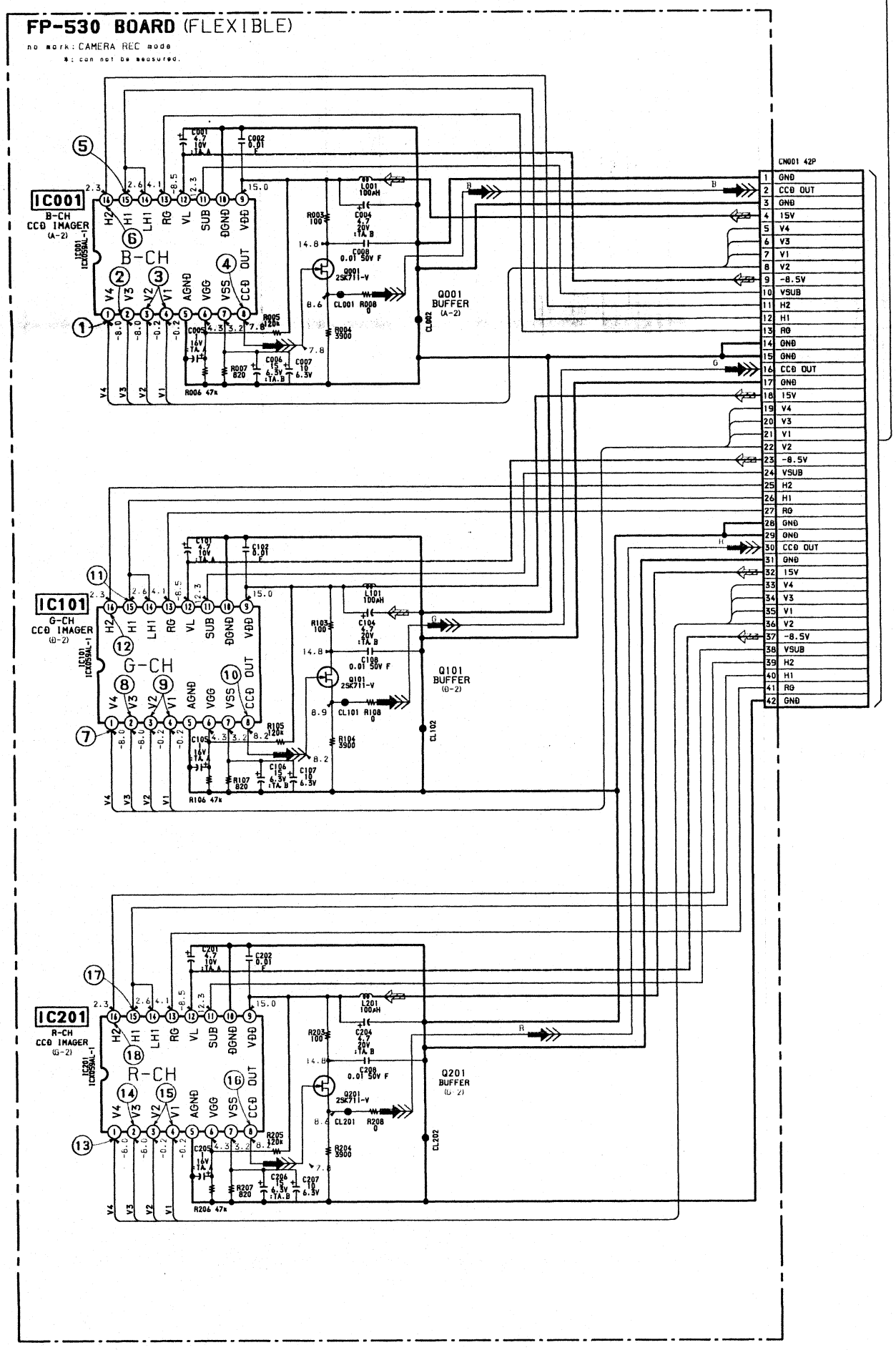
< TRANSISTOR >

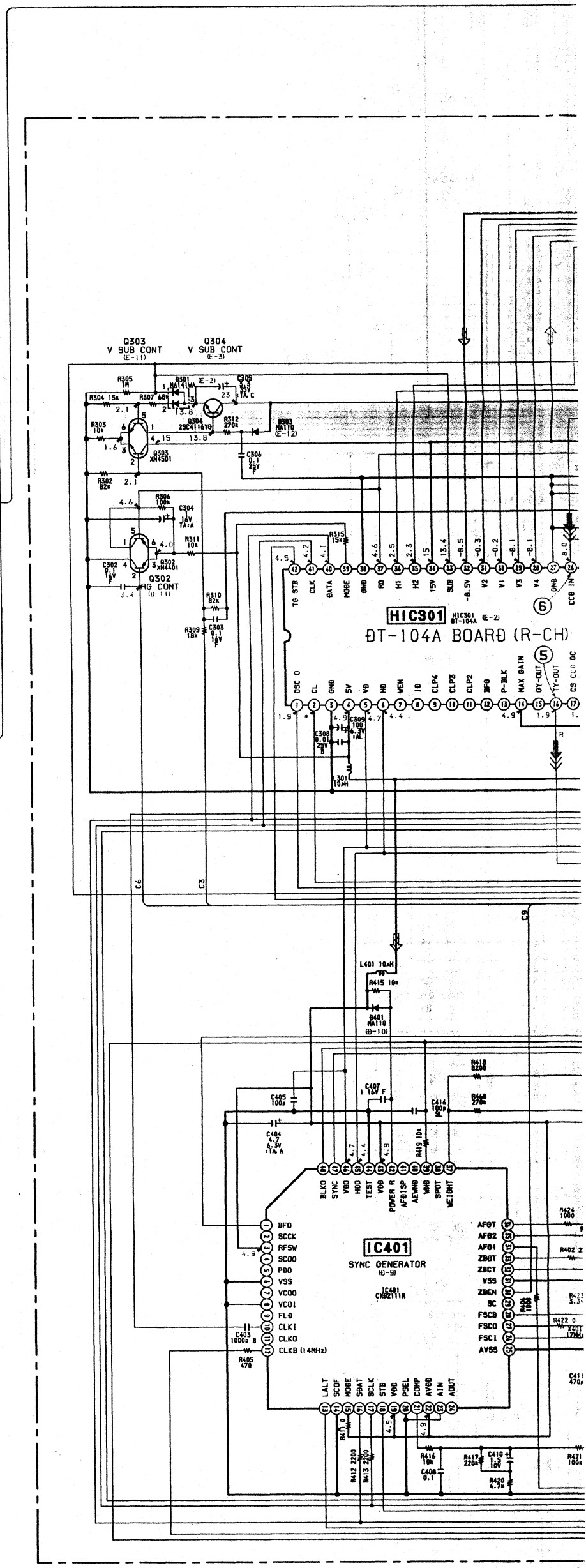
Q102	8-729-403-27	TRANSISTOR	XN4401
Q103	8-729-402-81	TRANSISTOR	XN4501
Q104	8-729-010-75	TRANSISTOR	MSC4116-BC
Q105	8-729-010-75	TRANSISTOR	MSC4116-BC
Q106	8-729-010-75	TRANSISTOR	MSC4116-BC
Q201	8-729-402-81	TRANSISTOR	XN4501
Q203	8-729-403-27	TRANSISTOR	XN4401
Q204	8-729-010-75	TRANSISTOR	MSC4116-BC
Q205	8-729-402-84	TRANSISTOR	XN4601
Q206	8-729-402-84	TRANSISTOR	XN4601
Q207	8-729-010-75	TRANSISTOR	MSC4116-BC
Q208	8-729-010-75	TRANSISTOR	MSC4116-BC
Q218	8-729-402-81	TRANSISTOR	XN4501
Q219	8-729-402-84	TRANSISTOR	XN4601
Q220	8-729-010-75	TRANSISTOR	MSC4116-BC
Q302	8-729-403-27	TRANSISTOR	XN4401
Q303	8-729-402-81	TRANSISTOR	XN4501
Q304	8-729-010-75	TRANSISTOR	MSC4116-BC
Q305	8-729-010-75	TRANSISTOR	MSC4116-BC
Q306	8-729-010-75	TRANSISTOR	MSC4116-BC
Q401	8-729-232-86	TRANSISTOR	2SK1875

CD-85 BOARD (CONDUCTOR SIDE)



— Ref. No. FP-530 BOARD: 1000 series, CD-85 BOARD: 2000 series —

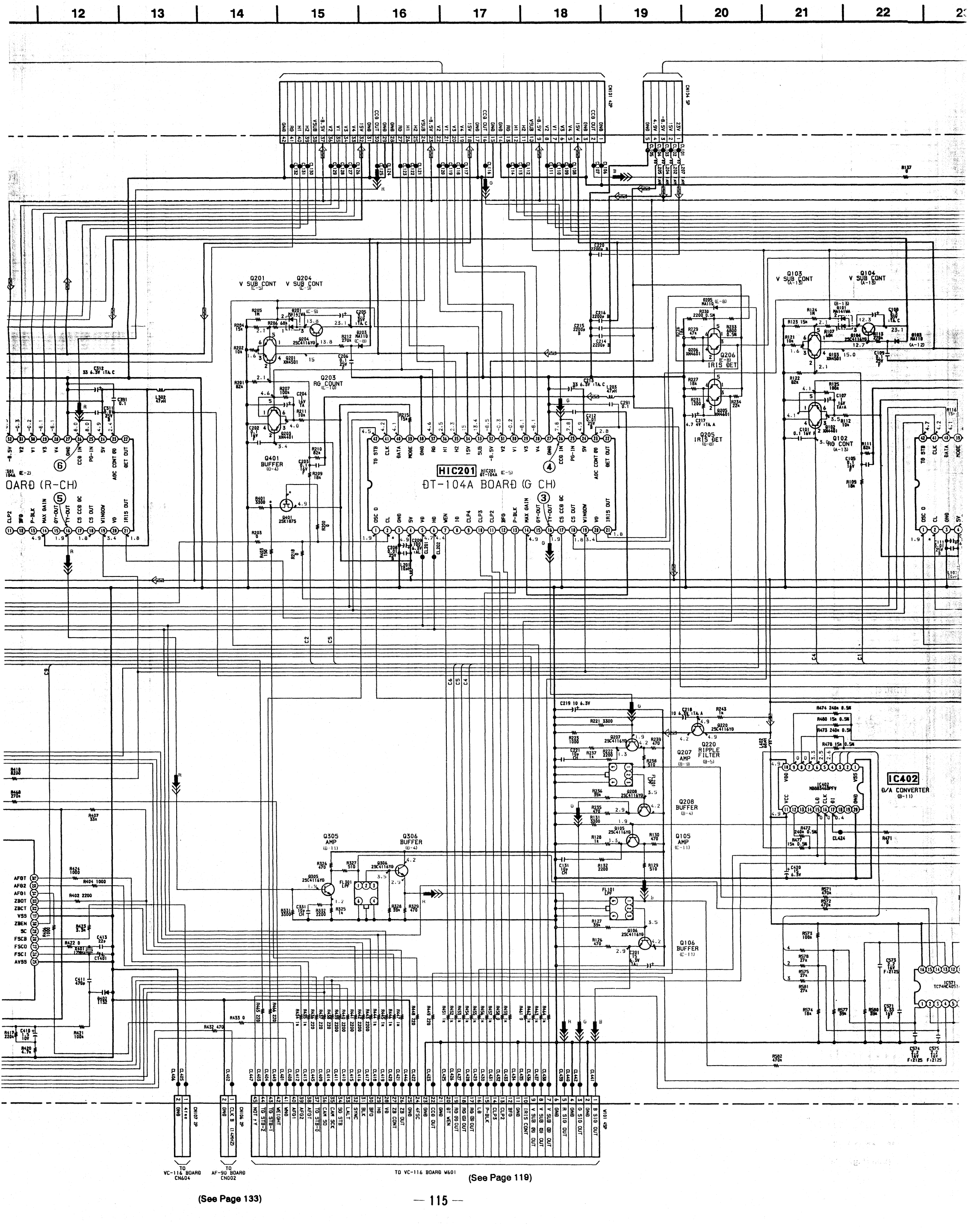




09

Precautions For Replacing The CCD Imager

- The prism CCD assembly is supplied as the CCD imager for repair.
  As highly precise resistance adjustment has been carried out for this prism CCD assembly when supplied, be careful not to apply excessive force, heat, etc. to it.
- The mounted FP-530 board provided as a repair part does not come with IC001, IC101, IC201.
  When replacing the board, remove it from the prism CCD assembly and attach a new one.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.


12
13
14
15
16
17
18
19
20
21
22
CN101 42P
CN104 5P
Q201 V SUB CONT (C-5)
Q204 V SUB CONT (C-5)
Q203 RG COUNT (C-10)
Q401 BUFFER (D-4)
HIC201 (C-5)
ĐT-104A BOARĐ (G CH)
OARĐ (R-CH)
Q205 IRIS DET (D-8)
Q206 IRIS ĐET (E-8)
Q103 V SUB CONT (A-13)
Q104 V SUB CONT (A-13)
Q102 RG CONT (A-13)
Q207 AMP (B-9)
Q220 RIPPLE FILTER (B-5)
Q208 BUFFER (B-4)
Q105 AMP (C-11)
Q106 BUFFER (C-11)
Q305 AMP (B-11)
Q306 BUFFER (B-4)
IC402 Đ/A CONVERTER (B-11)
IC571
CN107 2P
CN104 2P
V101 45P
TO VC-116 BOARĐ CN604
TO AF-90 BOARĐ CN002
TO VC-116 BOARĐ W601
(See Page 133)
(See Page 119)

22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	
PB				

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

CAM DC/DC CONVERTER ⚠

23V	1
15V	2
-8.5V	3
4.9V	4
GND	5

1	CAM UNREG	TO FU-107 BOARD CN252
2	UNREG GND	
3	AF UNREG	
4	AF GND	

(See Page 208)

1	CAM BB ON	TO VC-116 BOARD CN601
2	CAM 4.9V	
3	CAM GND	

(See Page 119)

1	AF 4.9V	TO AF-90 BOARD CN003
2	AF GND	

(See Page 133)

HIC101 HIC101 DT-104A (B-2)
DT-104A BOARD (B-CH)

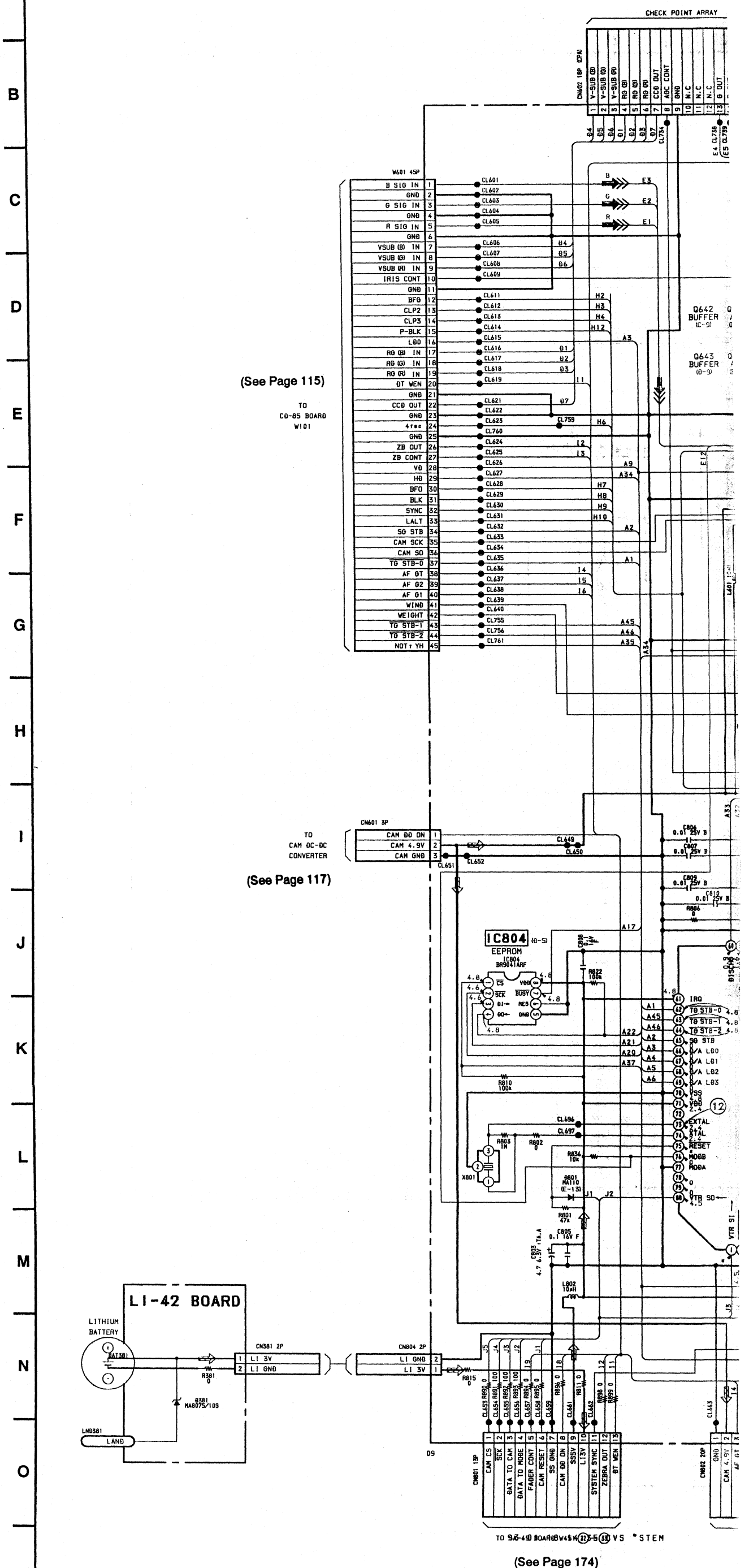
Q218 IRIS MIX (F-9)
Q219 IRIS MIX (E-9)

IC403 NAND (B-13)
IC404 NAND (C-13)
IC405 D FLIP FLOP (C-12)
IC402 D/A CONVERTER (B-11)
IC504 D/A CONVERTER (E-11)
IC571
IC512 AGC CONTROL AMP (E-13)

no mark: CAMERA REC mode
*: can not be measured

CD-85 BOARD

— Ref. No. VC-116 BOARD: 2000 series, LI-42 BOARD: 3000 series —



VC-116 BOARD

❶ IC601 (58) 0.26Vp-p(H)	❼ IC751 (1) 0.5Vp-p(H)
❷ IC601 (61) 0.2Vp-p(H)	❽ IC751 (20) 0.22Vp-p(H)
❸ IC601 (63) 0.2Vp-p(H)	❾ IC751 (22) 1.2Vp-p(H)
❹ IC601 (66) 0.3Vp-p(H)	❿ IC751 (40) 0.4Vp-p(H)
❺ IC601 (70) 0.1Vp p(H)	⓫ IC751 (47) 0.32Vp-p(H)
❻ IC601 (74) 0.13Vp-p(H)	⓬ IC801 (73) 1.3Vp-p

(See Page 137)

CHECK POINT ARRAY

CN602 18P (CPA)

V-SUB (B) V-SUB (G) V-SUB (R) RG (B) RG (G) RG (R) CCD OUT AGC CONT GND N.C N.C N.C G OUT B OUT R OUT G OUT N.C DTL OUT

CL734 CL738 CL739 CL740 CL741 CL743

TO LENS BLOCK

CN851 8P

CONT (+) DRIVE (+) HALL (-) BIAS (-) HALL (+) BIAS (+) DRIVE (-) CONT (-)

CL746 CL747 CL748 CL749 CL750 CL751 CL752 CL753

(1)–(3) BIAS CURRENT CONTROL
(5)–(7) HALL AMP
(8)–(12) AE AMP
(12)–(14) IRIS METER CONTROL

Q851 BIAS CURRENT CONTROL (E-6)

Q627 RIPPLE FILTER (B-6)

Q607 AMP (C-8)

IC851 SWITCH (B-9)

IC852 (B-6)

Q641 BUFFER (B-6) Q601 AMP (B-6) Q602 BUFFER (A-9)

Q642 BUFFER (C-9) Q603 AMP (B-9) Q604 BUFFER (B-9)

Q643 BUFFER (B-9) Q605 AMP (B-9) Q606 BUFFER (B-9)

IC606 AMP (C-10)

(B-10) Q617 DET (B-10) Q619 DET (C-9) IC700 DC ADD (B-10) Q705 BUFFER

AGC TRACKING (1)

ACC TRACKING (2)

IC851 TC4053BF-EL

IC852 LM324PW-EL

IC853 IRIS DRIVE, HALL BIAS (E-10)

IC752 Y D/A CONVERTER (B-2)

IC854 Y D/A CONVERTER (B-10)

IC601 CAMERA Y PROCESS (B-4)

IC603 1H DL (A-4)

IC604 REF AMP (B-15)

IC605 VERTICAL APERTURE COMPENSATION (A-12)

IC801 CAMERA CONTROL (B-4)

Q801 SWITCH (C-11) Q802 SWITCH (C-11)

Q622 LPF (B-11) Q707 BUFFER (B-11)

Q700, Q701, Q702 MAX (B-1)

Q628, 629 (A-5) BUFFER (A-12)

IRQ
TO STB-0
TO STB-1
TO STB-2
SG STB
D/A LD0
D/A LD1
D/A LD2
D/A LD3

MTX-IN-R
MTX-IN-YH

CN802 20P

CAM 4.9V, AF G1, AF G2, AF G1, REF 1.0, REF 3.5, YH IN, NOT YH, FA/FH, AF A/D-1, PH RESET, FOCUS ENB (F), FOCUS ENB LED, FOCUS SENS1, FOCUS SENS2, VD, HD, CS PDR, PDR RESET

CN803 17P

SCK, SO, JCS, ZOOM POSI 1, ZOOM POSI 4, DA OUT, ZOOM PWM, ZOOM T, ZOOM W, AF A/D-2, PSD OUT, MF LEB, NB CONT IN, NB CONT OUT, NB POSI IN, NB POSI OUT, PWB-EN

TO AF-90 BOARD W001 (1)–(20)

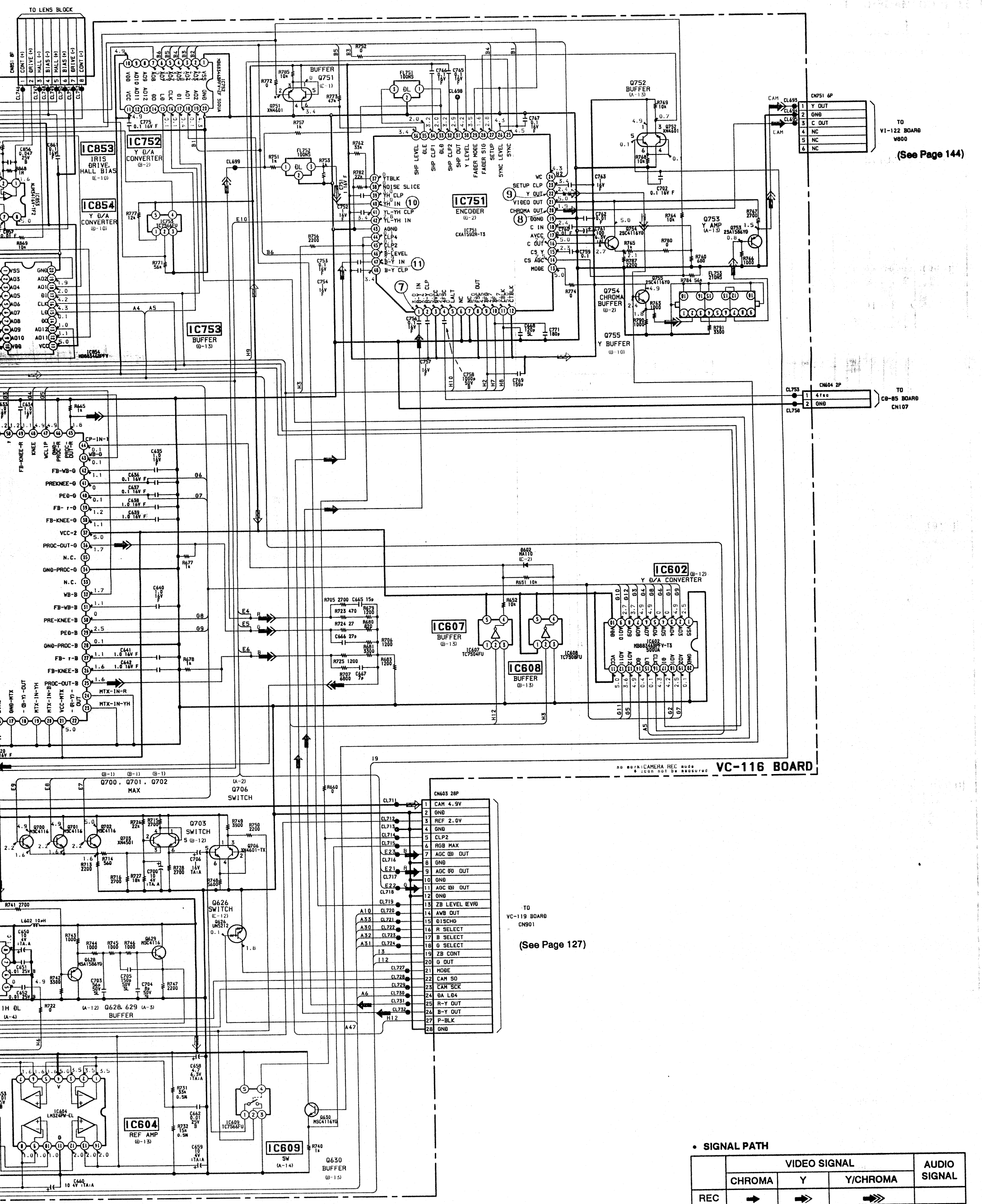
TO AF-90 BOARD W001 (21)–(37)

(See Page 174)

(See Page 133)

(See Page 133)

(See Page 137)



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	
PB				

VC-116 (CAMERA), LI-42 (LITHIUM BATTERY) PRINTED WIRING BOARDS

— Ref. No. VC-116 BOARD: 2000 series, LI-42 BOARD: 3000 series —

< DIODE >

D601	8-719-404-46	DIODE	MA110
D602	8-719-404-46	DIODE	MA110
D801	8-719-404-46	DIODE	MA110

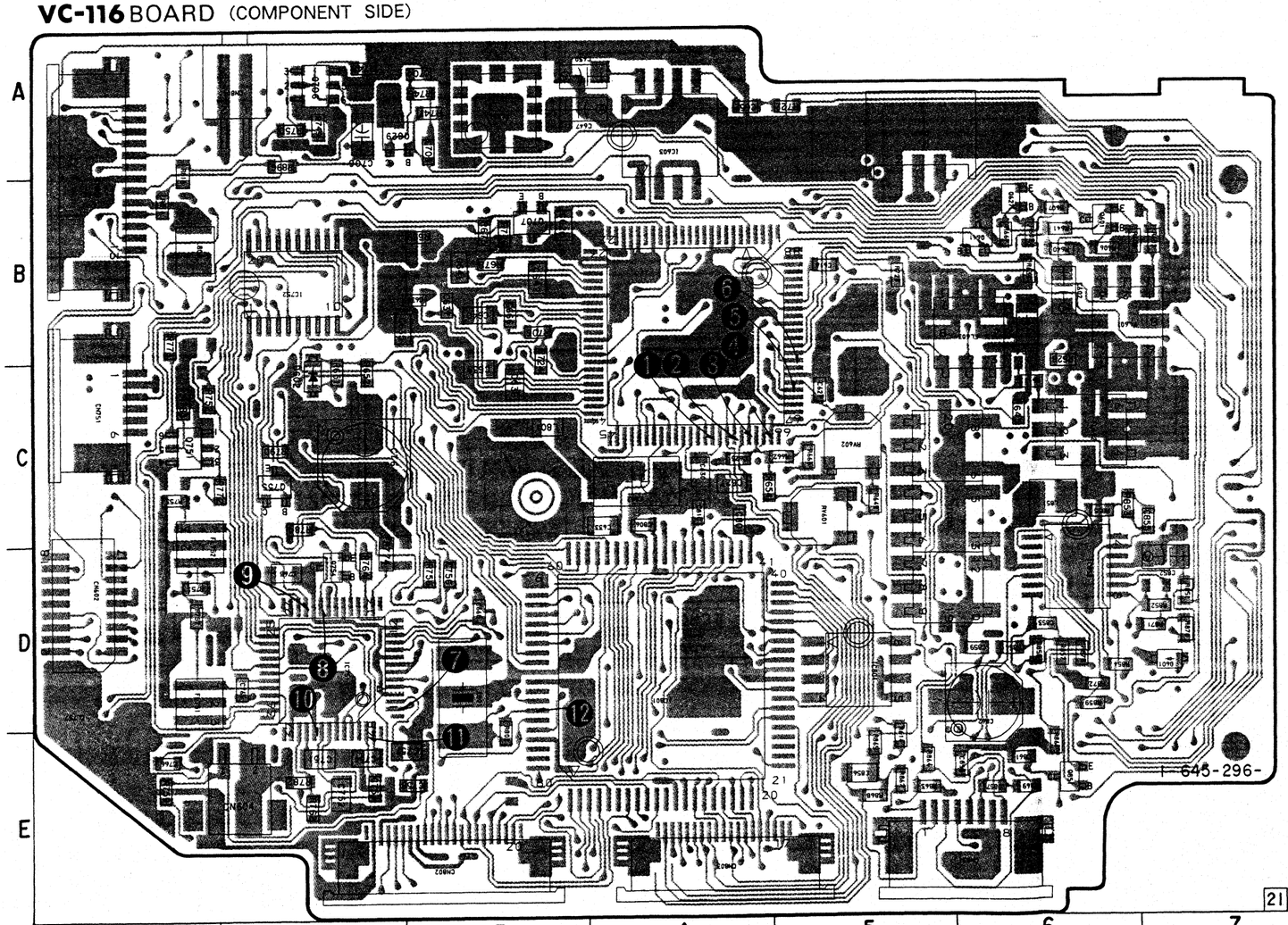
< IC >

IC601	8-759-059-00	IC	uPC2372AGK
IC602	8-759-635-27	IC	M62352GP
IC603	8-752-332-69	IC	CXL5504M
IC604	8-759-059-03	IC	LM324PW
IC605	8-752-035-49	IC	CXA1270N
IC606	8-759-058-41	IC	NJM3416V
IC607	8-759-058-57	IC	TC7S04FU
IC608	8-759-058-61	IC	TC7S08FU
IC609	8-759-082-60	IC	TC7S66FU
IC700	8-759-082-61	IC	TC4W53FU
IC751	8-752-056-59	IC	CXA1592R
IC752	8-759-635-27	IC	M62352GP
IC753	8-759-082-60	IC	TC7S66FU
IC801	8-759-168-97	IC	SC406813FUMC68HC11M2
IC804	8-759-085-50	IC	BR9041ARF
IC851	8-759-066-61	IC	TC4053BFS
IC852	8-759-059-03	IC	LM324PW
IC853	8-759-058-41	IC	NJM3416V
IC854	8-759-635-27	IC	M62352GP

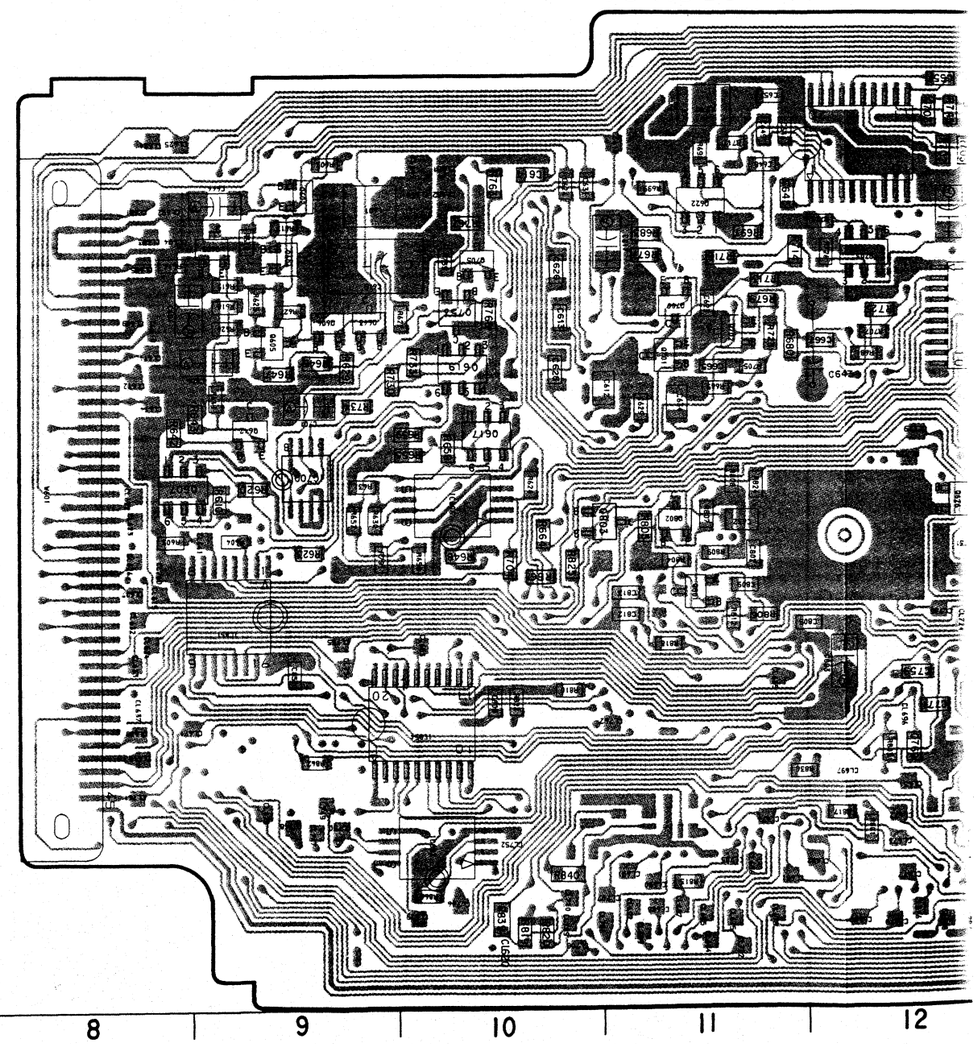
< TRANSISTOR >

Q601	8-729-010-75	TRANSISTOR	MSC4116-BC	Q626	8-729-402-45	TRANSISTOR	UN5212	Q702	8-729-010-75	TRANSISTOR	MSC4116-BC
Q602	8-729-010-75	TRANSISTOR	MSC4116-BC	Q627	8-729-010-75	TRANSISTOR	MSC4116-BC	Q703	8-729-402-81	TRANSISTOR	XN4501
Q603	8-729-010-75	TRANSISTOR	MSC4116-BC	Q628	8-729-010-60	TRANSISTOR	MSA1586-BC	Q705	8-729-010-75	TRANSISTOR	MSC4116-BC
Q604	8-729-010-75	TRANSISTOR	MSC4116-BC	Q629	8-729-010-75	TRANSISTOR	MSC4116-BC	Q706	8-729-402-84	TRANSISTOR	XN4601
Q605	8-729-010-75	TRANSISTOR	MSC4116-BC	Q630	8-729-010-75	TRANSISTOR	MSC4116-BC	Q707	8-729-010-75	TRANSISTOR	MSC4116-BC
Q606	8-729-010-75	TRANSISTOR	MSC4116-BC	Q641	8-729-010-75	TRANSISTOR	MSC4116-BC	Q751	8-729-402-84	TRANSISTOR	XN4601
Q607	8-729-402-84	TRANSISTOR	XN4601	Q642	8-729-010-75	TRANSISTOR	MSC4116-BC	Q752	8-729-402-84	TRANSISTOR	XN4601
Q617	8-729-402-84	TRANSISTOR	XN4601	Q643	8-729-010-75	TRANSISTOR	MSC4116-BC	Q753	8-729-010-60	TRANSISTOR	MSA1586-BC
Q619	8-729-402-84	TRANSISTOR	XN4601	Q700	8-729-010-75	TRANSISTOR	MSC4116-BC	Q754	8-729-010-75	TRANSISTOR	MSC4116-BC
Q622	8-729-402-84	TRANSISTOR	XN4601	Q701	8-729-010-75	TRANSISTOR	MSC4116-BC	Q755	8-729-010-75	TRANSISTOR	MSC4116-BC

VC-116 BOARD (COMPONENT SIDE)



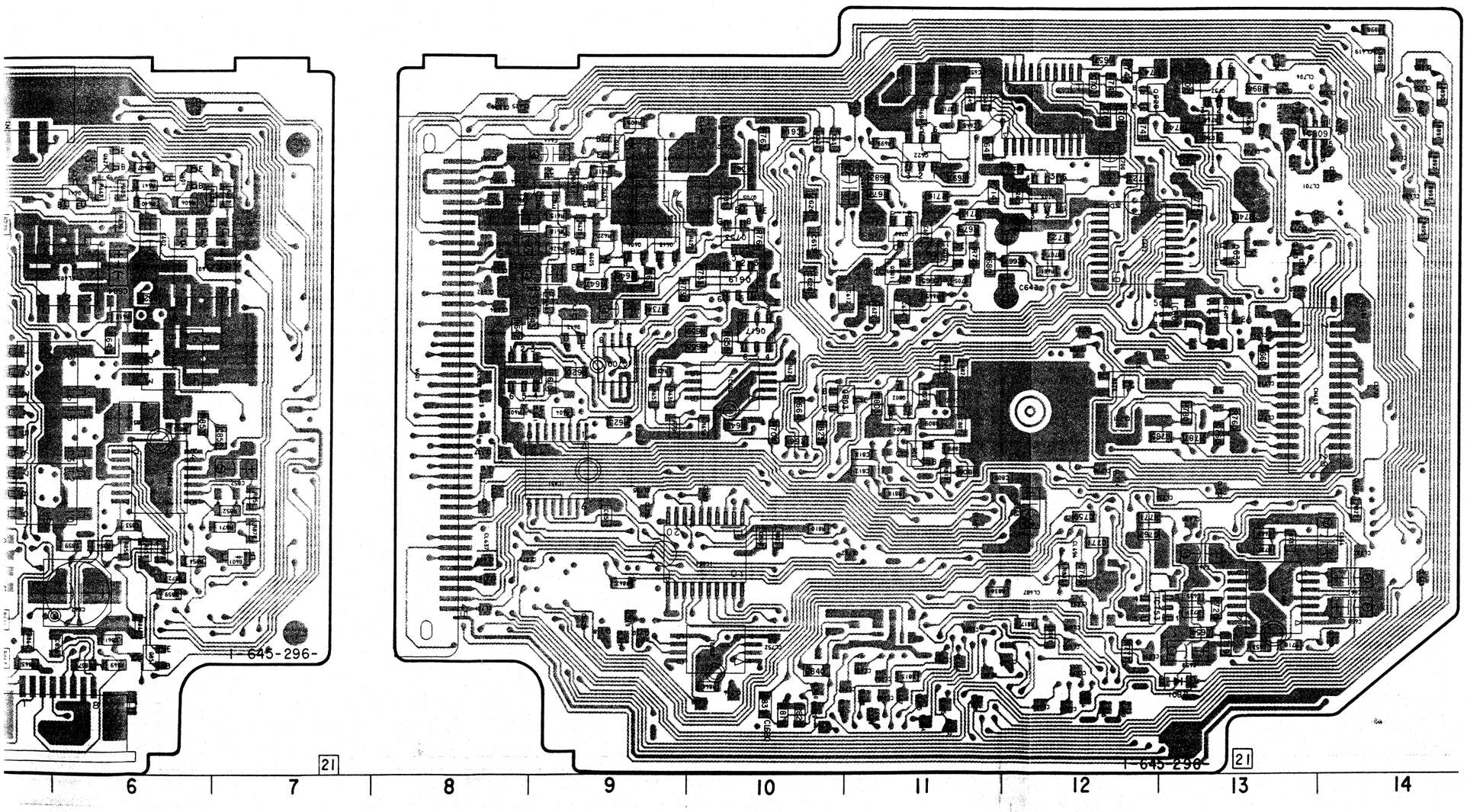
VC-116 BOARD (CONDUCTOR S



< TRANSISTOR >

:R	Q601	8-729-010-75	TRANSISTOR	MSC4116-BC	Q626	8-729-402-45	TRANSISTOR	UN5212	Q702	8-729-010-75	TRANSISTOR	MSC4116-BC	Q801	8-729-010-75	TRANSISTOR	MSC4116-BC
:P	Q602	8-729-010-75	TRANSISTOR	MSC4116-BC	Q627	8-729-010-75	TRANSISTOR	MSC4116-BC	Q703	8-729-402-81	TRANSISTOR	XN4501	Q802	8-729-010-75	TRANSISTOR	MSC4116-BC
:U	Q603	8-729-010-75	TRANSISTOR	MSC4116-BC	Q628	8-729-010-60	TRANSISTOR	MSA1586-BC	Q705	8-729-010-75	TRANSISTOR	MSC4116-BC	Q803	8-729-010-75	TRANSISTOR	MSC4116-BC
3FUMC68HC11M2	Q604	8-729-010-75	TRANSISTOR	MSC4116-BC	Q629	8-729-010-75	TRANSISTOR	MSC4116-BC	Q706	8-729-402-84	TRANSISTOR	XN4601	Q851	8-729-010-75	TRANSISTOR	MSC4116-BC
RF	Q605	8-729-010-75	TRANSISTOR	MSC4116-BC	Q630	8-729-010-75	TRANSISTOR	MSC4116-BC	Q707	8-729-010-75	TRANSISTOR	MSC4116-BC				
FS	Q606	8-729-010-75	TRANSISTOR	MSC4116-BC	Q641	8-729-010-75	TRANSISTOR	MSC4116-BC	Q751	8-729-402-84	TRANSISTOR	XN4601				
	Q607	8-729-402-84	TRANSISTOR	XN4601	Q642	8-729-010-75	TRANSISTOR	MSC4116-BC	Q752	8-729-402-84	TRANSISTOR	XN4601				
V	Q617	8-729-402-84	TRANSISTOR	XN4601	Q643	8-729-010-75	TRANSISTOR	MSC4116-BC	Q753	8-729-010-60	TRANSISTOR	MSA1586-BC				
P	Q619	8-729-402-84	TRANSISTOR	XN4601	Q700	8-729-010-75	TRANSISTOR	MSC4116-BC	Q754	8-729-010-75	TRANSISTOR	MSC4116-BC				
	Q622	8-729-402-84	TRANSISTOR	XN4601	Q701	8-729-010-75	TRANSISTOR	MSC4116-BC	Q755	8-729-010-75	TRANSISTOR	MSC4116-BC				

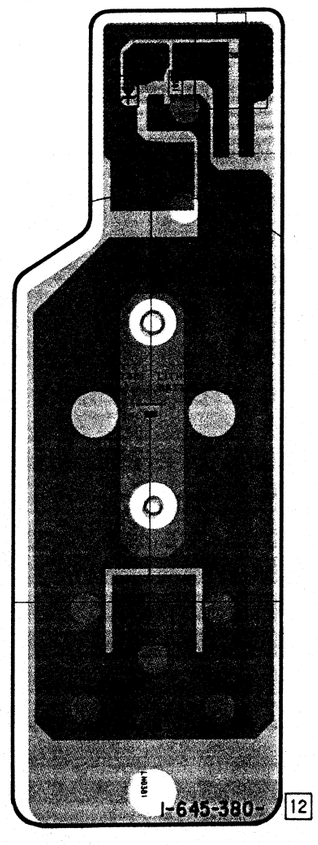
VC-116 BOARD (CONDUCTOR SIDE)



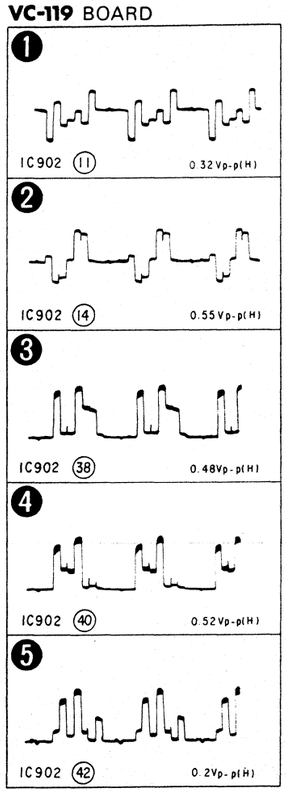
< DIODE >

D381 8-719-027-65 DIODE MA8075-10

LI-42 BOARD



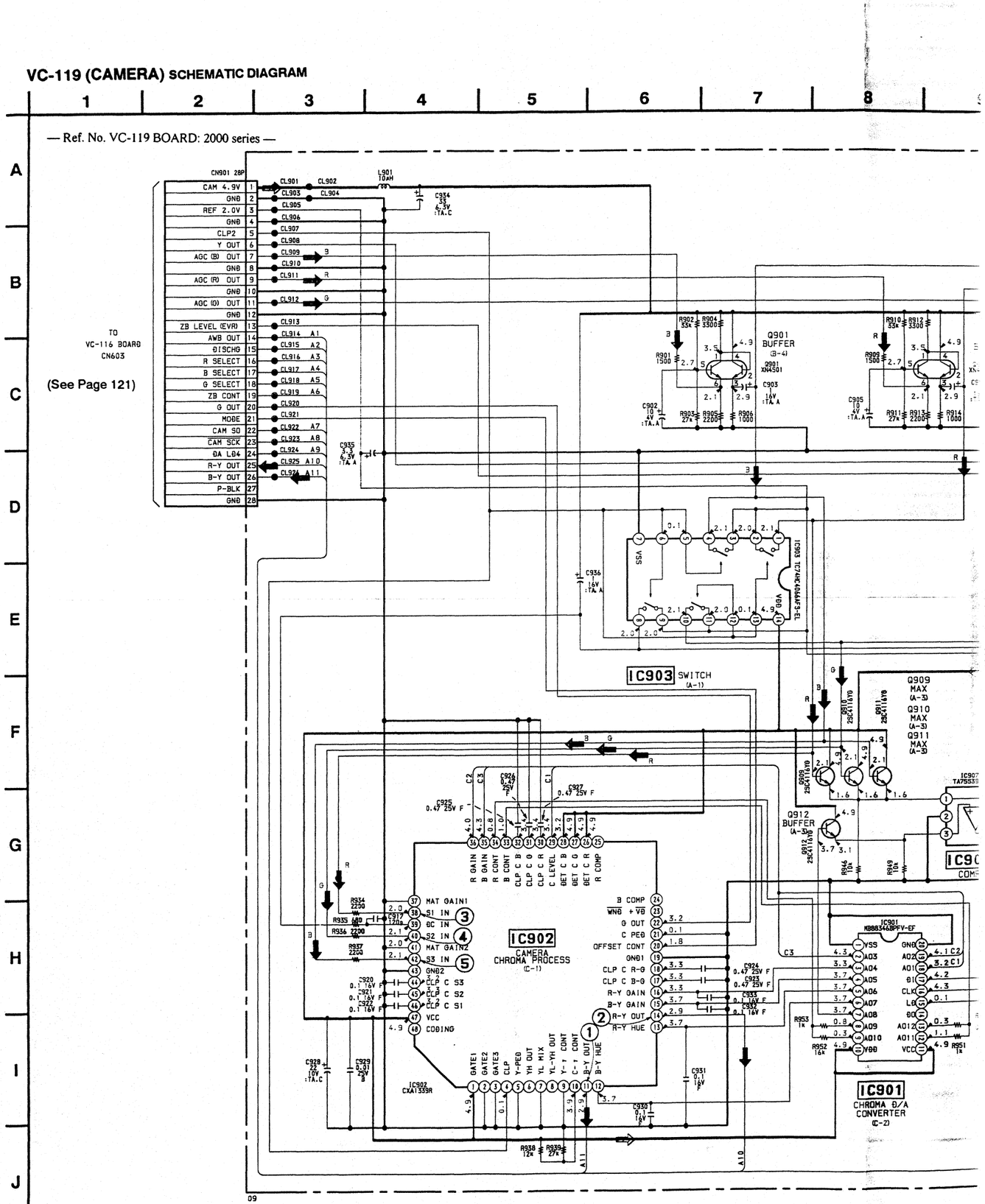
VC-119 BOARD



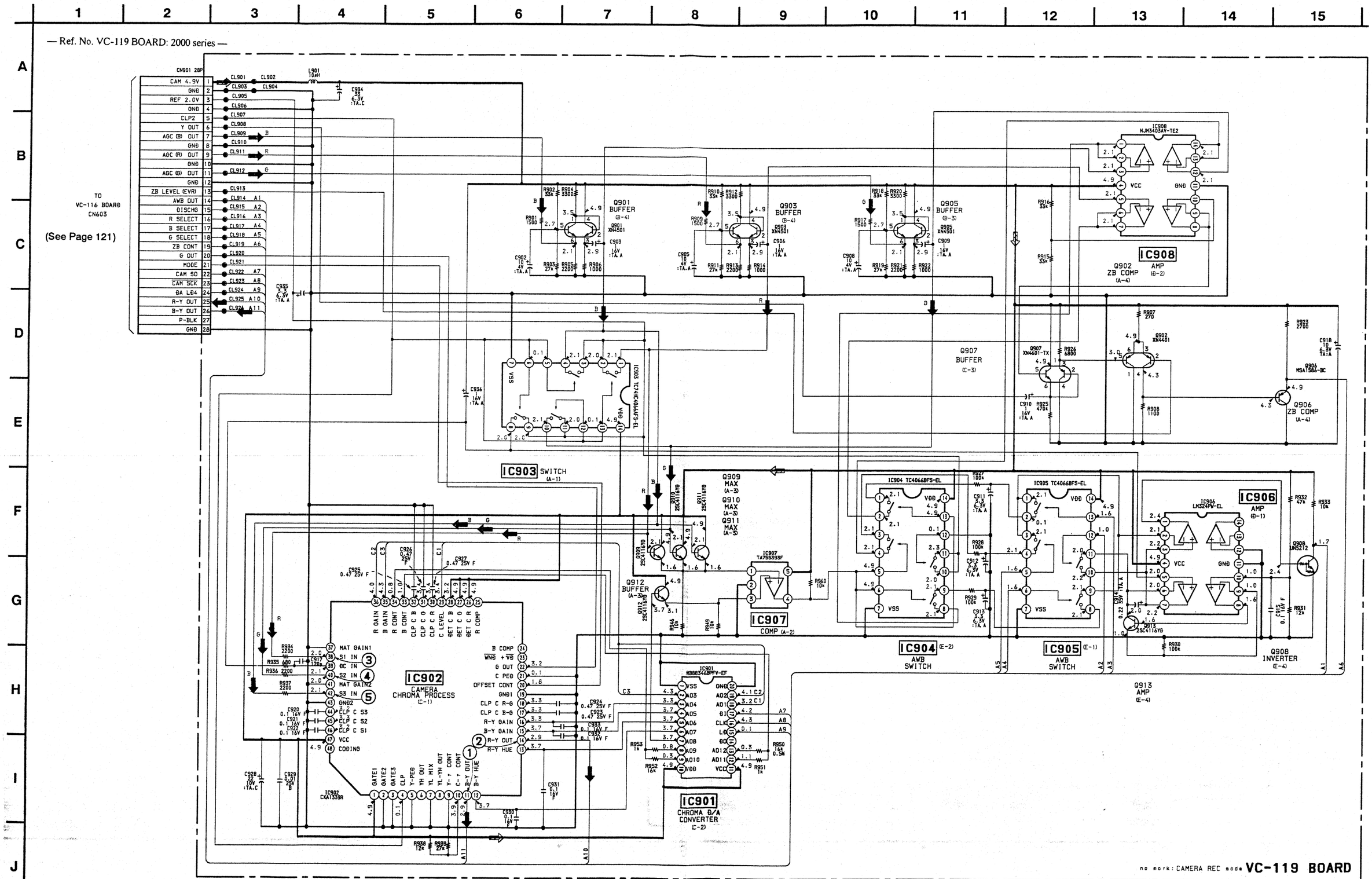
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡			
PB				

VC-119 (CAMERA) SCHEMATIC DIAGRAM



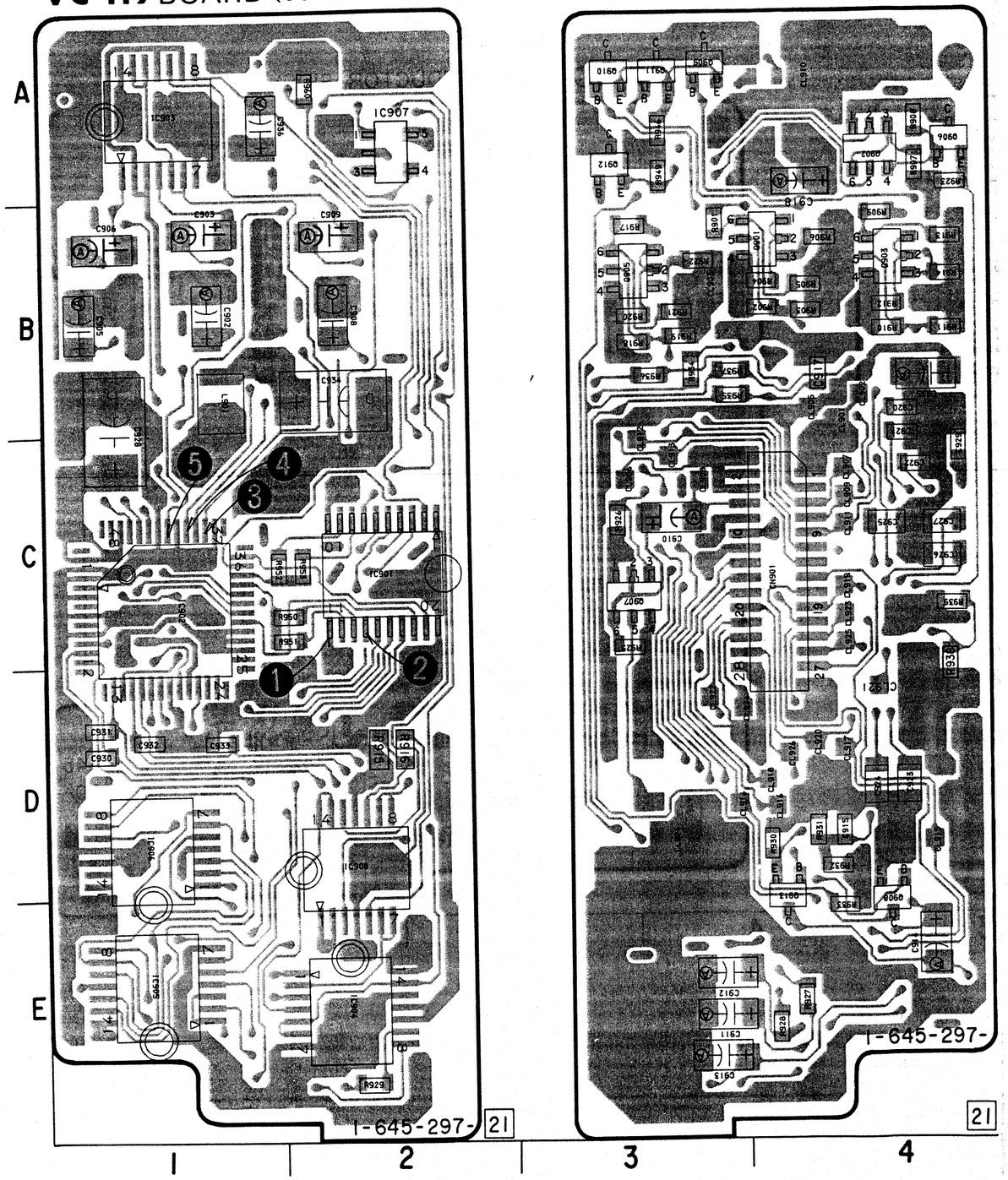
— Ref. No. VC-119 BOARD: 2000 series —



VC-119 (CAMERA) PRINTED WIRING BOARD

— Ref. No. VC-119 BOARD: 2000 series —

VC-119 BOARD (COMPONENT SIDE)



09

VC-119 BOARD (CONDUCTOR SIDE)

< IC >

IC901	8-759-635-27	IC	M62352GP
IC902	8-752-034-21	IC	CXA1339R
IC903	8-759-066-57	IC	TC74HC4066AFS
IC904	8-759-075-68	IC	TC4066BFS
IC905	8-759-075-68	IC	TC4066BFS
IC906	8-759-059-03	IC	LM324PW
IC907	8-759-075-70	IC	TA75S393F
IC908	8-759-058-45	IC	NJM3403AV

< TRANSISTOR >

Q901	8-729-402-81	TRANSISTOR	XN4501
Q902	8-729-403-27	TRANSISTOR	XN4401
Q903	8-729-402-81	TRANSISTOR	XN4501
Q905	8-729-402-81	TRANSISTOR	XN4501
Q906	8-729-010-60	TRANSISTOR	MSA1586-BC
Q907	8-729-402-84	TRANSISTOR	XN4601
Q908	8-729-402-45	TRANSISTOR	UN5212
Q909	8-729-010-75	TRANSISTOR	MSC4116-BC
Q910	8-729-010-75	TRANSISTOR	MSC4116-BC
Q911	8-729-010-75	TRANSISTOR	MSC4116-BC
Q912	8-729-010-75	TRANSISTOR	MSC4116-BC
Q913	8-729-010-75	TRANSISTOR	MSC4116-BC

AF-90 (AUTO FOCUS) PRINTED WIRING BOARD

— Ref. No. AF-90 BOARD: 3000 series —

< DIODE >

D001	8-719-422-97	DIODE	MA8091-M

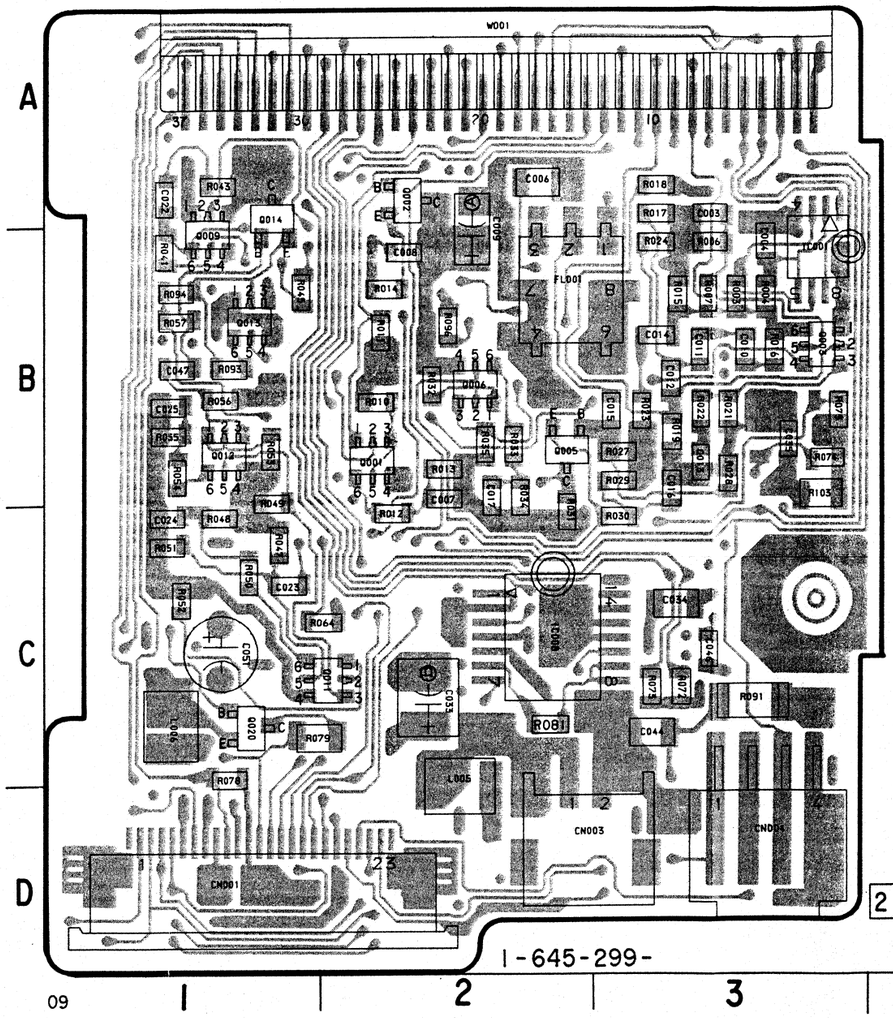
< IC >

IC001	8-759-066-55	IC	TA75W393FU
IC002	8-759-066-61	IC	TC4053BFS
IC003	8-759-059-03	IC	LM324PW
IC004	8-752-355-56	IC	CXD2104BN
IC005	8-759-058-47	IC	MPC1724VM
IC006	8-759-823-51	IC	LB1830M
IC007	8-759-513-26	IC	XRU5846FS
IC008	8-759-059-03	IC	LM324PW
IC009	8-759-823-51	IC	LB1830M

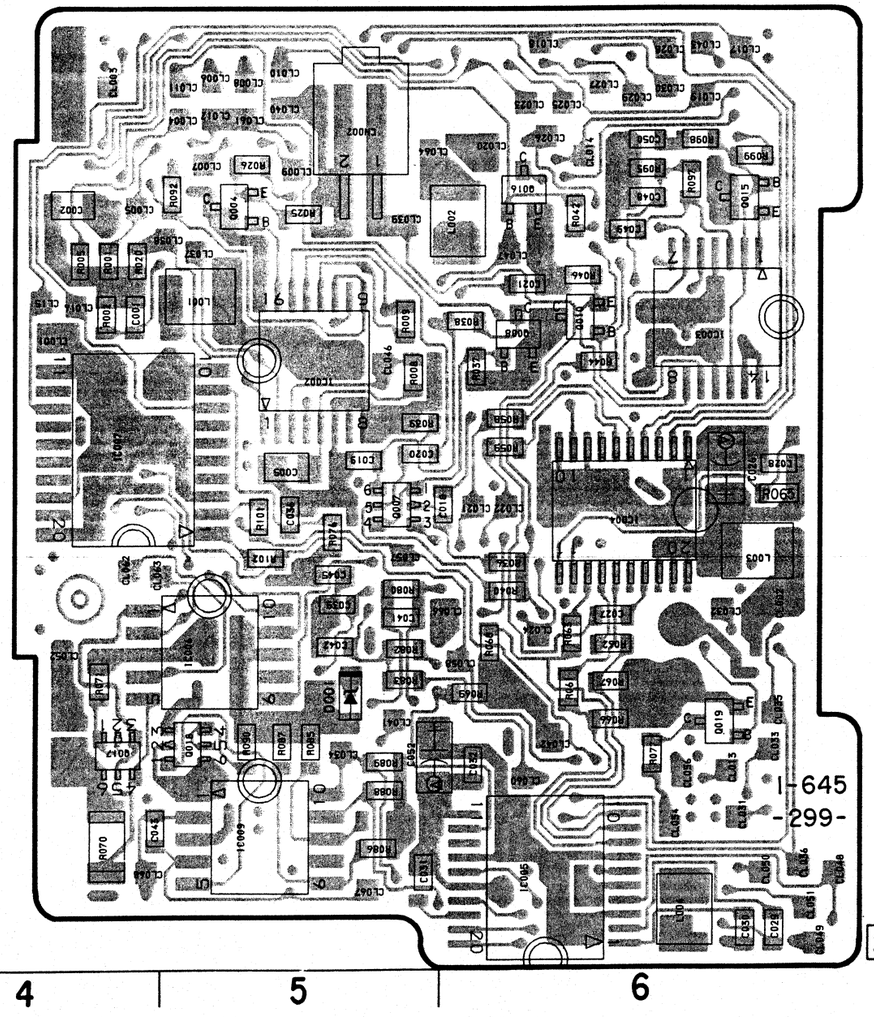
< TRANSISTOR >

Q001	8-729-427-74	TRANSISTOR	XP4601
Q002	8-729-010-75	TRANSISTOR	MSC4116-BC
Q003	8-729-427-72	TRANSISTOR	XP4501
Q004	8-729-010-75	TRANSISTOR	MSC4116-BC
Q005	8-729-010-60	TRANSISTOR	MSA1586-BC
Q006	8-729-427-72	TRANSISTOR	XP4501
Q007	8-729-427-72	TRANSISTOR	XP4501
Q008	8-729-010-60	TRANSISTOR	MSA1586-BC
Q009	8-729-427-72	TRANSISTOR	XP4501
Q010	8-729-010-75	TRANSISTOR	MSC4116-BC
Q011	8-729-427-70	TRANSISTOR	XP4401
Q012	8-729-427-72	TRANSISTOR	XP4501
Q013	8-729-427-72	TRANSISTOR	XP4501
Q014	8-729-010-60	TRANSISTOR	MSA1586-BC
Q015	8-729-010-75	TRANSISTOR	MSC4116-BC
Q016	8-729-402-45	TRANSISTOR	UN5212
Q017	8-729-427-70	TRANSISTOR	XP4401
Q018	8-729-427-70	TRANSISTOR	XP4401
Q019	8-729-402-45	TRANSISTOR	UN5212
Q020	8-729-403-35	TRANSISTOR	UN5113

AF-90 BOARD (COMPONENT SIDE)

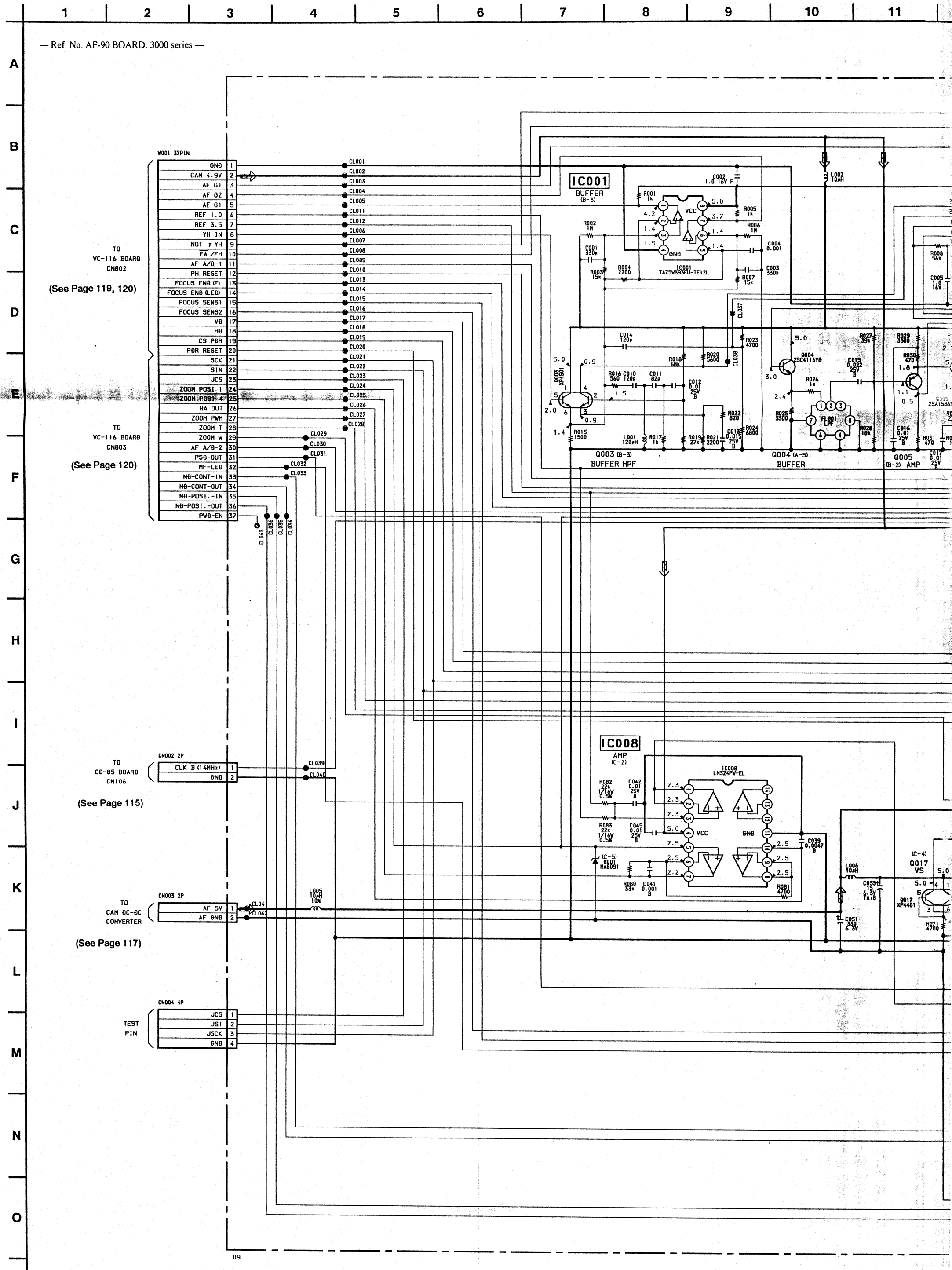


AF-90 BOARD (CONDUCTOR SIDE)



AF-90 (AUTO FOCUS) SCHEMATIC DIAGRAM

— Ref. No. AF-90 BOARD: 3000 series —



VI-122 (VIDEO) PRINTED WIRING BOARD

— Ref. No. VI-122 BOARD: 5000 series —

< DIODE >

D550	8-719-404-35	DIODE MA141WK	D805	8-719-404-46	DIODE MA110	D815	8-719-027-65	DIODE MA8075-10
D551	8-719-404-46	DIODE MA110	D806	8-719-027-65	DIODE MA8075-10	D816	8-719-027-65	DIODE MA8075-10
D552	8-719-404-35	DIODE MA141WK	D807	8-719-027-65	DIODE MA8075-10	D817	8-719-027-65	DIODE MA8075-10
D553	8-719-404-46	DIODE MA110	D808	8-719-027-65	DIODE MA8075-10	D818	8-719-800-76	DIODE 1SS226
D555	8-719-404-46	DIODE MA110	D809	8-719-027-65	DIODE MA8075-10	D819	8-719-404-35	DIODE MA141WK
D556	8-719-404-46	DIODE MA110	D810	8-719-027-65	DIODE MA8075-10	D821	8-719-027-65	DIODE MA8075-10
D557	8-719-404-46	DIODE MA110	D811	8-719-027-65	DIODE MA8075-10			
D801	8-719-404-40	DIODE MA121	D812	8-719-027-65	DIODE MA8075-10			
D802	8-719-404-40	DIODE MA121	D813	8-719-027-65	DIODE MA8075-10			
D803	8-719-404-35	DIODE MA141WK	D814	8-719-027-65	DIODE MA8075-10			

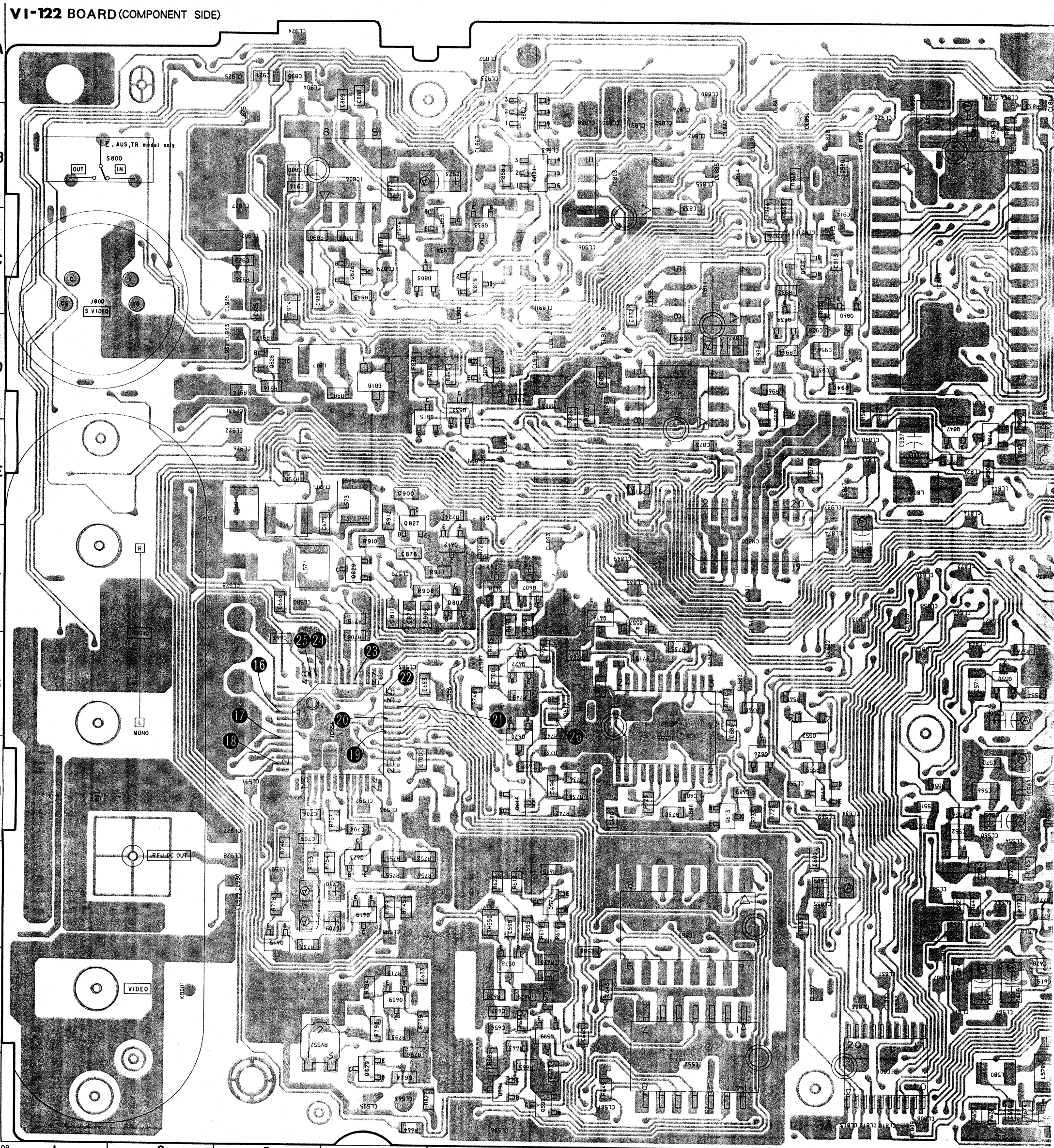
< IC >

IC550	8-752-333-24	IC CXL1506M	IC803	8-752-053-21	IC CXA1211M	IC808	8-759-038-83	IC MC13400FU
IC551	8-752-065-54	IC CXA1207AR	IC804	8-752-058-02	IC CXA1509AR	IC809	8-752-350-78	IC CXK58257AM-70L
IC552	8-752-340-25	IC CXL5505M	IC805	8-759-085-51	IC NJM2284M	IC810	8-759-514-57	IC BA7046F
IC553	8-752-053-21	IC CXA1211M	IC806	8-759-710-07	IC NJM2234M	IC811	8-752-053-21	IC CXA1211M
IC554	8-759-636-33	IC CXA1452N	IC807	8-759-075-64	IC LV4101W	IC812	8-759-710-29	IC NJM2235M
IC555	8-752-605-61	IC CXA1203N						
IC556	8-752-065-56	IC CXA1208R						
IC800	8-759-518-90	IC MB88362PFV						
IC801	8-759-064-36	IC MB88346BPFV						
IC802	8-759-518-90	IC MB88362PFV						

< TRANSI

Q550	8-729-010-60	TRANSIST
Q551	8-729-010-60	TRANSIST
Q552	8-729-824-05	TRANSIST
Q553	8-729-402-42	TRANSIST
Q555	8-729-402-42	TRANSIST
Q556	8-729-807-87	TRANSIST
Q557	8-729-402-42	TRANSIST
Q558	8-729-402-42	TRANSIST
Q559	8-729-403-35	TRANSIST
Q560	8-729-420-13	TRANSIST
Q561	8-729-402-42	TRANSIST
Q562	8-729-807-87	TRANSIST
Q563	8-729-010-75	TRANSIST
Q564	8-729-423-55	TRANSIST
Q565	8-729-420-47	TRANSIST

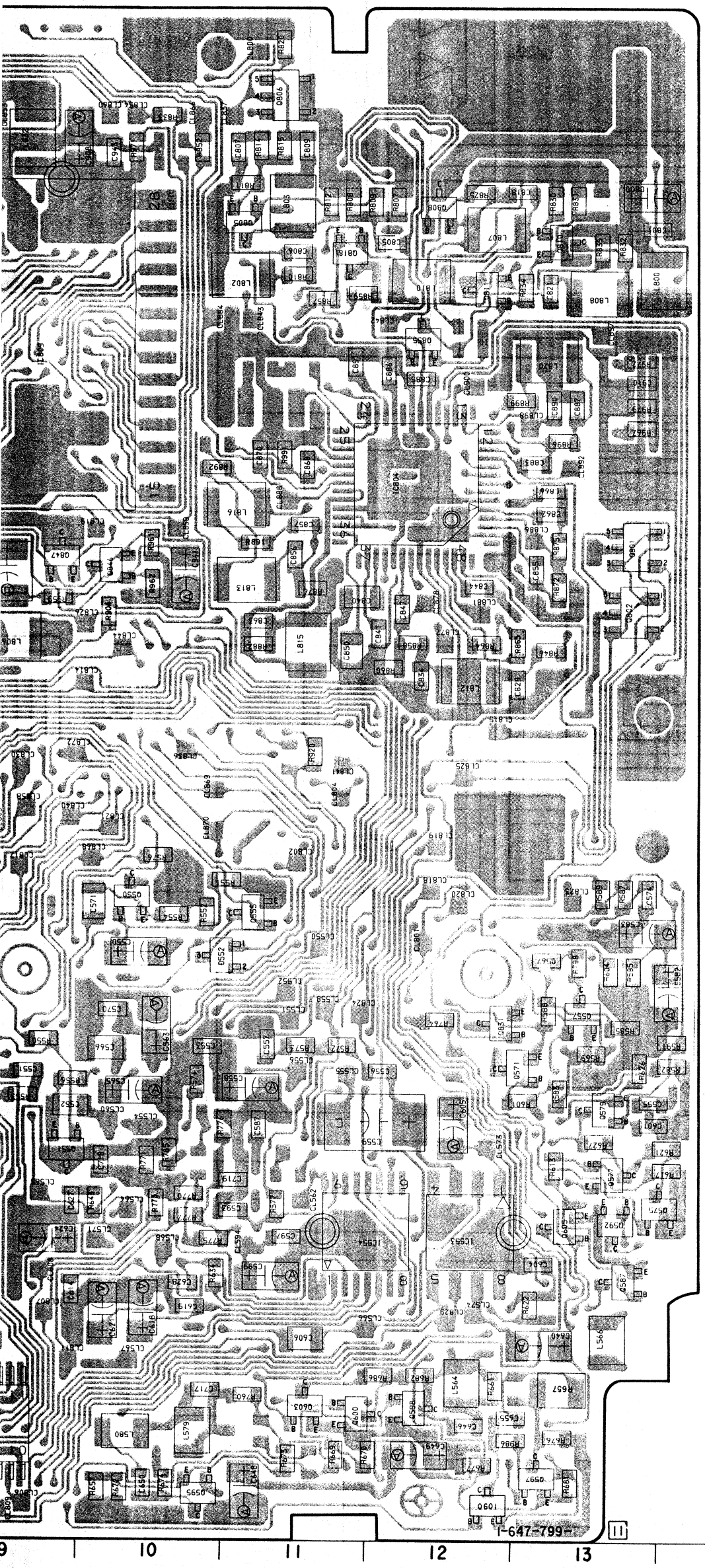
VI-122 BOARD (COMPONENT SIDE)

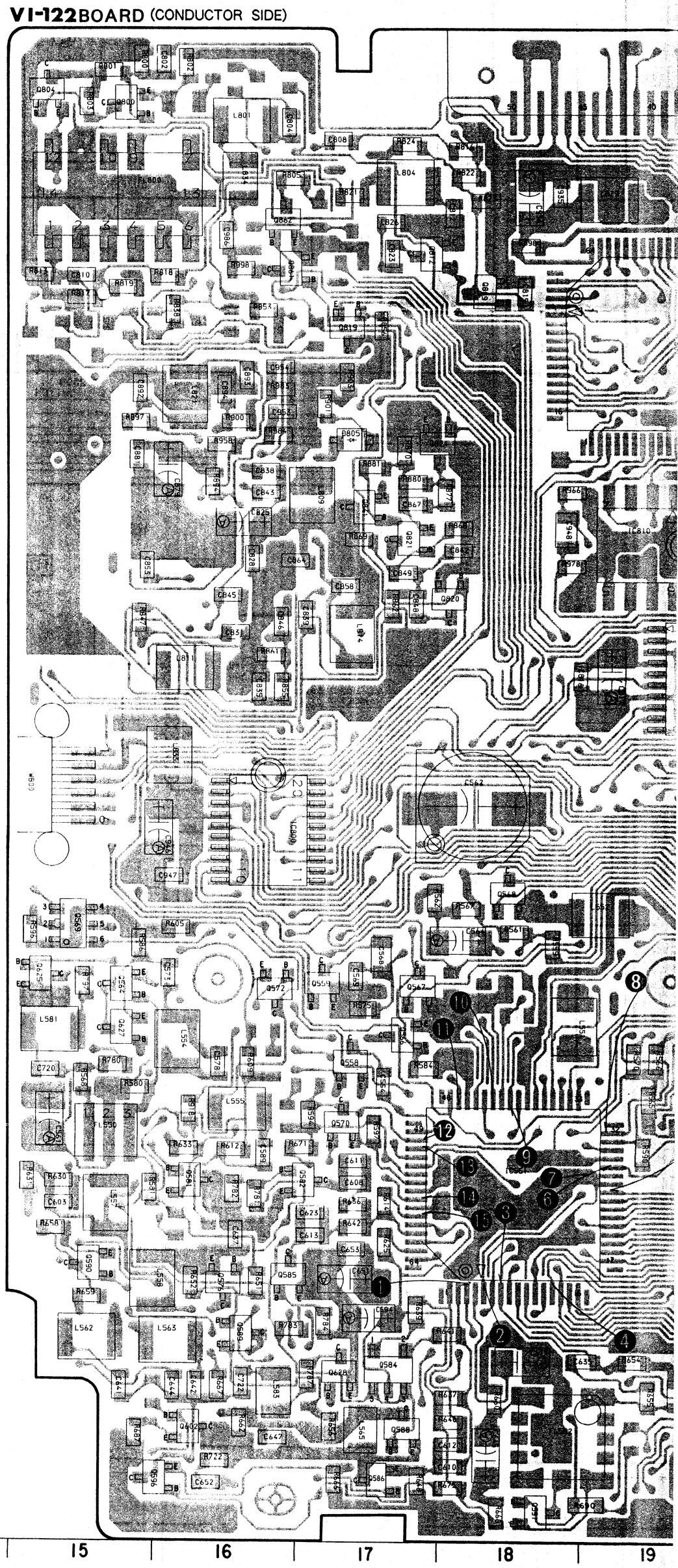


< TRANSISTOR >

Q550	8-729-010-60	TRANSISTOR	MSA1586-BC	Q566	8-729-402-42	TRANSISTOR	UN5213	Q582	8-729-209-07	TRANSISTOR	2SC4213-B	Q597	8-729-010-60	TRANSISTOR	MSA1586-BC	Q613	8-729-402-42	TRANSISTOR	UN5213
Q551	8-729-010-60	TRANSISTOR	MSA1586-BC	Q567	8-729-402-42	TRANSISTOR	UN5213	Q583	8-729-402-42	TRANSISTOR	UN5213	Q598	8-729-010-60	TRANSISTOR	MSA1586-BC	Q614	8-729-403-35	TRANSISTOR	UN5113
Q552	8-729-824-05	TRANSISTOR	3SK248	Q568	8-729-010-60	TRANSISTOR	MSA1586-BC	Q584	8-729-403-06	TRANSISTOR	XN1113	Q599	8-729-010-60	TRANSISTOR	MSA1586-BC	Q615	8-729-010-75	TRANSISTOR	MSC4116-BC
Q553	8-729-402-42	TRANSISTOR	UN5213	Q569	8-729-402-81	TRANSISTOR	XN4501	Q585	8-729-209-07	TRANSISTOR	2SC4213-B	Q600	8-729-403-35	TRANSISTOR	UN5113	Q616	8-729-010-75	TRANSISTOR	MSC4116-BC
Q555	8-729-402-42	TRANSISTOR	UN5213	Q570	8-729-403-35	TRANSISTOR	UN5113	Q586	8-729-010-75	TRANSISTOR	MSC4116-BC	Q601	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q618	8-729-010-75	TRANSISTOR	MSC4116-BC
Q556	8-729-807-87	TRANSISTOR	2SB1295-UL6	Q571	8-729-010-75	TRANSISTOR	MSC4116-BC	Q587	8-729-013-88	TRANSISTOR	RN1302	Q602	8-729-010-75	TRANSISTOR	MSC4116-BC	Q619	8-729-010-75	TRANSISTOR	MSC4116-BC
Q557	8-729-402-42	TRANSISTOR	UN5213	Q572	8-729-010-75	TRANSISTOR	MSC4116-BC	Q588	8-729-420-47	TRANSISTOR	UN511L	Q603	8-729-403-35	TRANSISTOR	UN5113	Q620	8-729-010-75	TRANSISTOR	MSC4116-BC
Q558	8-729-402-42	TRANSISTOR	UN5213	Q574	8-729-010-60	TRANSISTOR	MSA1586-BC	Q589	8-729-010-60	TRANSISTOR	MSA1586-BC	Q604	8-729-010-75	TRANSISTOR	MSC4116-BC	Q621	8-729-010-75	TRANSISTOR	MSC4116-BC
Q559	8-729-403-35	TRANSISTOR	UN5113	Q575	8-729-403-35	TRANSISTOR	UN5113	Q590	8-729-402-42	TRANSISTOR	UN5213	Q605	8-729-013-88	TRANSISTOR	RN1302	Q622	8-729-402-42	TRANSISTOR	UN5213
Q560	8-729-420-13	TRANSISTOR	XN4213	Q576	8-729-420-47	TRANSISTOR	UN511L	Q591	8-729-402-42	TRANSISTOR	UN5213	Q606	8-729-010-60	TRANSISTOR	MSA1586-BC	Q623	8-729-403-35	TRANSISTOR	UN5113
Q561	8-729-402-42	TRANSISTOR	UN5213	Q577	8-729-010-60	TRANSISTOR	MSA1586-BC	Q592	8-729-402-42	TRANSISTOR	UN5213	Q607	8-729-010-75	TRANSISTOR	MSC4116-BC	Q624	8-729-010-60	TRANSISTOR	MSA1586-BC
Q562	8-729-807-87	TRANSISTOR	2SB1295-UL6	Q578	8-729-010-75	TRANSISTOR	MSC4116-BC	Q593	8-729-402-42	TRANSISTOR	UN5213	Q608	8-729-010-75	TRANSISTOR	MSC4116-BC	Q625	8-729-013-88	TRANSISTOR	RN1302
Q563	8-729-010-75	TRANSISTOR	MSC4116-BC	Q579	8-729-423-55	TRANSISTOR	2SC3931-D	Q594	8-729-010-75	TRANSISTOR	MSC4116-BC	Q609	8-729-010-75	TRANSISTOR	MSC4116-BC	Q626	8-729-402-42	TRANSISTOR	UN5213
Q564	8-729-423-55	TRANSISTOR	2SC3931-D	Q580	8-729-010-75	TRANSISTOR	MSC4116-BC	Q595	8-729-423-55	TRANSISTOR	2SC3931-D	Q610	8-729-010-75	TRANSISTOR	MSC4116-BC	Q627	8-729-423-55	TRANSISTOR	2SC3931-D
Q565	8-729-420-47	TRANSISTOR	UN511L	Q581	8-729-010-60	TRANSISTOR	MSA1586-BC	Q596	8-729-010-75	TRANSISTOR	MSC4116-BC	Q612	8-729-010-60	TRANSISTOR	MSA1586-BC	Q628	8-729-013-88	TRANSISTOR	RN1302

VI-122 BOARD (CONDUCTOR SIDE)

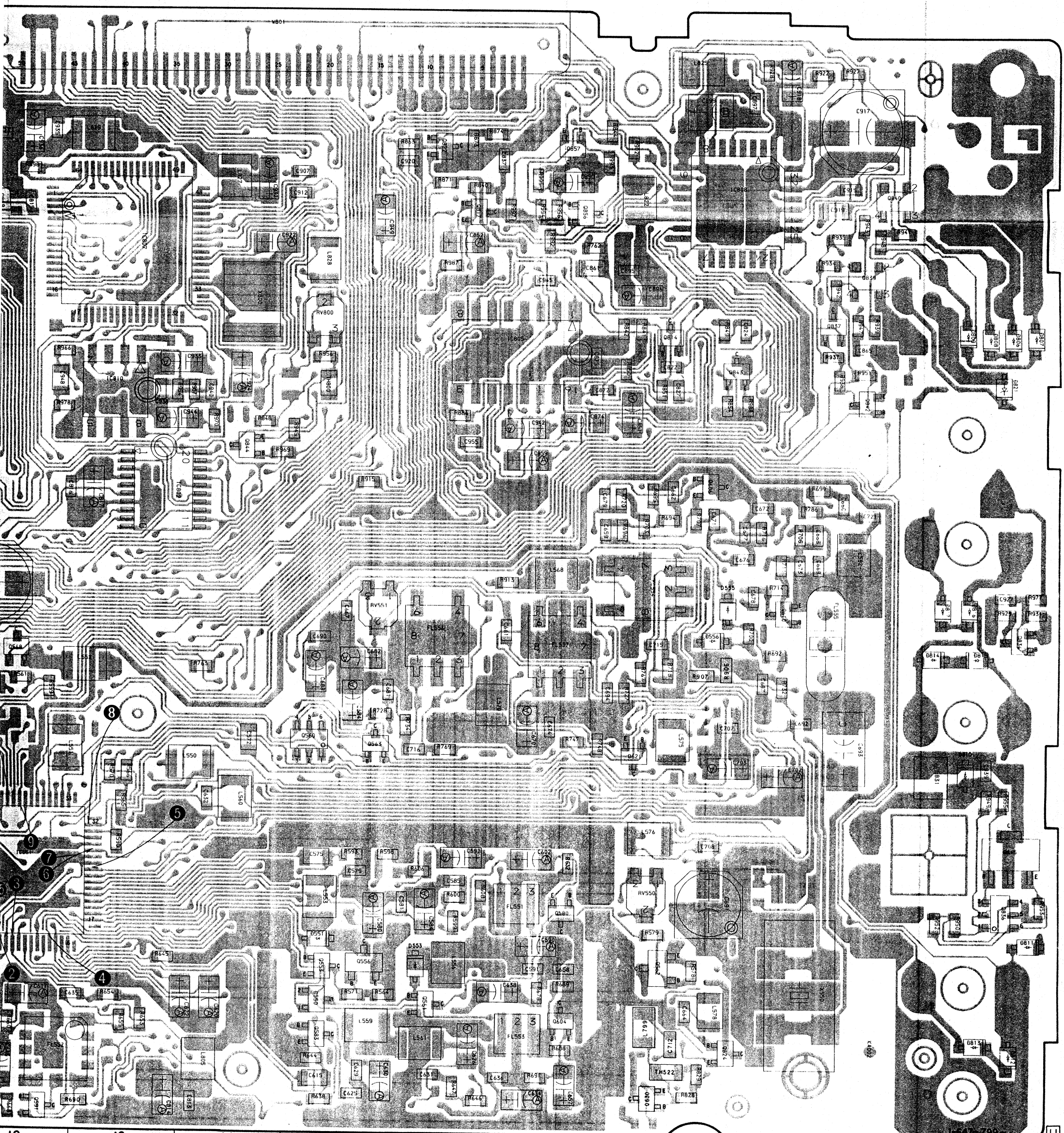




02-42	TRANSISTOR	UN5213	Q800	8-729-010-75	TRANSISTOR	MSC4116-BC	Q818	8-729-010-75	TRANSISTOR	MSC4116-BC	
03-35	TRANSISTOR	UN5113	Q801	8-729-403-07	TRANSISTOR	XN1213	Q819	8-729-010-60	TRANSISTOR	MSA1586-BC	
10-75	TRANSISTOR	MSC4116-BC	Q802	8-729-403-06	TRANSISTOR	XN1113	Q820	8-729-402-42	TRANSISTOR	UN5213	
10-75	TRANSISTOR	MSC4116-BC	Q804	8-729-010-75	TRANSISTOR	MSC4116-BC	Q821	8-729-117-31	TRANSISTOR	2SC4177-L5	
10-75	TRANSISTOR	MSC4116-BC	Q805	8-729-010-75	TRANSISTOR	MSC4116-BC	Q822	8-729-010-60	TRANSISTOR	MSA1586-BC	
10-75	TRANSISTOR	MSC4116-BC	Q806	8-729-402-13	TRANSISTOR	XN1501	Q824	8-729-402-42	TRANSISTOR	UN5213	
10-75	TRANSISTOR	MSC4116-BC	Q807	8-729-010-75	TRANSISTOR	MSC4116-BC	Q826	8-729-010-75	TRANSISTOR	MSC4116-BC	
10-75	TRANSISTOR	MSC4116-BC	Q808	8-729-010-75	TRANSISTOR	MSC4116-BC	Q827	8-729-010-75	TRANSISTOR	MSC4116-BC	
02-42	TRANSISTOR	UN5213	Q809	8-729-402-42	TRANSISTOR	UN5213	Q828	8-729-010-60	TRANSISTOR	MSA1586-BC	
03-35	TRANSISTOR	UN5113	Q810	8-729-010-75	TRANSISTOR	MSC4116-BC	Q829	8-729-402-42	TRANSISTOR	UN5213	
10-60	TRANSISTOR	MSA1586-BC	Q811	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q831	8-729-402-42	TRANSISTOR	UN5213	
13-88	TRANSISTOR	RN1302	Q812	8-729-402-42	TRANSISTOR	UN5213	Q832	8-729-010-60	TRANSISTOR	MSA1586-BC	
02-42	TRANSISTOR	UN5213	Q814	8-729-010-60	TRANSISTOR	MSA1586-BC	Q833	8-729-402-42	TRANSISTOR	UN5213	
23-55	TRANSISTOR	2SC3931-D	Q815	8-729-010-60	TRANSISTOR	MSA1586-BC	Q834	8-729-010-60	TRANSISTOR	MSA1586-BC	
13-88	TRANSISTOR	RN1302	Q817	8-729-010-60	TRANSISTOR	MSA1586-BC	Q835	8-729-010-75	TRANSISTOR	MSC4116-BC	

Q836	8-729-402-78	TRANSISTOR	XN6401								
Q837	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q838	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q839	8-729-824-05	TRANSISTOR	3SK248								
Q840	8-729-824-05	TRANSISTOR	3SK248								
Q841	8-729-117-31	TRANSISTOR	2SC4177-L5								
Q842	8-729-420-53	TRANSISTOR	UN5115								
Q843	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q844	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q845	8-729-106-60	TRANSISTOR	2SB1115A-YQ								
Q846	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q847	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q848	8-729-010-60	TRANSISTOR	MSA1586-BC								
Q852	8-729-010-60	TRANSISTOR	MSA1586-BC								
Q853	8-729-402-42	TRANSISTOR	UN5213								

Q855	8-729-420-50	TRANSISTOR	UN5215								
Q856	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q857	8-729-010-75	TRANSISTOR	MSC4116-BC								
Q860	8-729-402-42	TRANSISTOR	UN5213								
Q861	8-729-402-42	TRANSISTOR	UN5213								
Q862	8-729-402-42	TRANSISTOR	UN5213								



• Refer to page 138 for Printed Wiring Board.

— Ref. No. VI-122 BOARD: 5000 series —

(See Page 122)

(See Page 169, 170)

VI-122 BOARD(1/2)

TO VC-116 BOARD CN751

TO SA-49 BOARD W120

TO VI-122 BOARD (2/2)

(See Page 148)

IC801 EVR (D/A CONVERTER)

IC801 MB88346BPFV

IC800 MB88362PFV

IC802 MB88362PFV

IC800 VIDEO SECTION CONTROL (D/A CONVERTER)

IC802 VIDEO SECTION CONTROL (D/A CONVERTER)

IC803 REC C CONT Y LEVEL

IC811 C OUT LEVEL Y OUT LEVEL

IC812 Y SW

IC804 Hi8 DET, SOFT LIMITER

Q801 XN1213 INVERTER

Q802 XN1113

Q814 CAM C AMP

Q832 AMP

Q815 AMP

Q820 L/E SWITCH

Q821 EQ

Q805 EQ

Q806, 809 L/E SWITCH

Q808 ATF TRAP

Q810 BUFFER

Q812 PEAKING FREQ SWITCH

Q818, 819 BUFFER

Q855

Q811 BUFFER

Q861 PEAKING SWITCH

Q862 PEAKING SWITCH

Q800, 804 6dB AMP

(See Page 169, 170)

(See Page 153)

TO SA-49 BOARD WI20

TO CR-42 BOARD CN001

IC812 (D-7) Y SW

IC803 (B-6) REC C CONT Y LEVEL

IC811 (C-7) C OUT LEVEL Y OUT LEVEL

IC806 (B-4) CHROMA SWITCH

IC808 (B-25) S VIDEO I/O

IC805 (D-23) SWITCH

IC807 (C-19) TITLER CONTROLLER

IC804 (D-12) Hi8 DET, SOFT LIMITER

Q822 V OUT C BUFFER

Q826 PB REG

Q853 DTC144EU SWITCH

Q843 (D-25) BUFFER

Q856 CHARACTER MIX

Q857 BUFFER

Q814 (D-24) CAM C AMP

Q832 (D-5) AMP

Q815 (D-4) AMP

Q817 (C-22) BUFFER

Q828 (D-3) BUFFER

Q852 (D-5) BUFFER

Q834 (G-27) JACK MONO/STEREO DET

Q833 (C-5) MUTE

Q841 (D-17) BUFFER

Q824 (D-17) L/E SWITCH

Q821 (D-17) EQ

Q820 (E-18) L/E SWITCH

Q806, 809 (A-11)(C-18) L/E SWITCH

Q812 (B-17) PEAKING FREQ SWITCH

Q818, 819 (B-11)(C-17) BUFFER

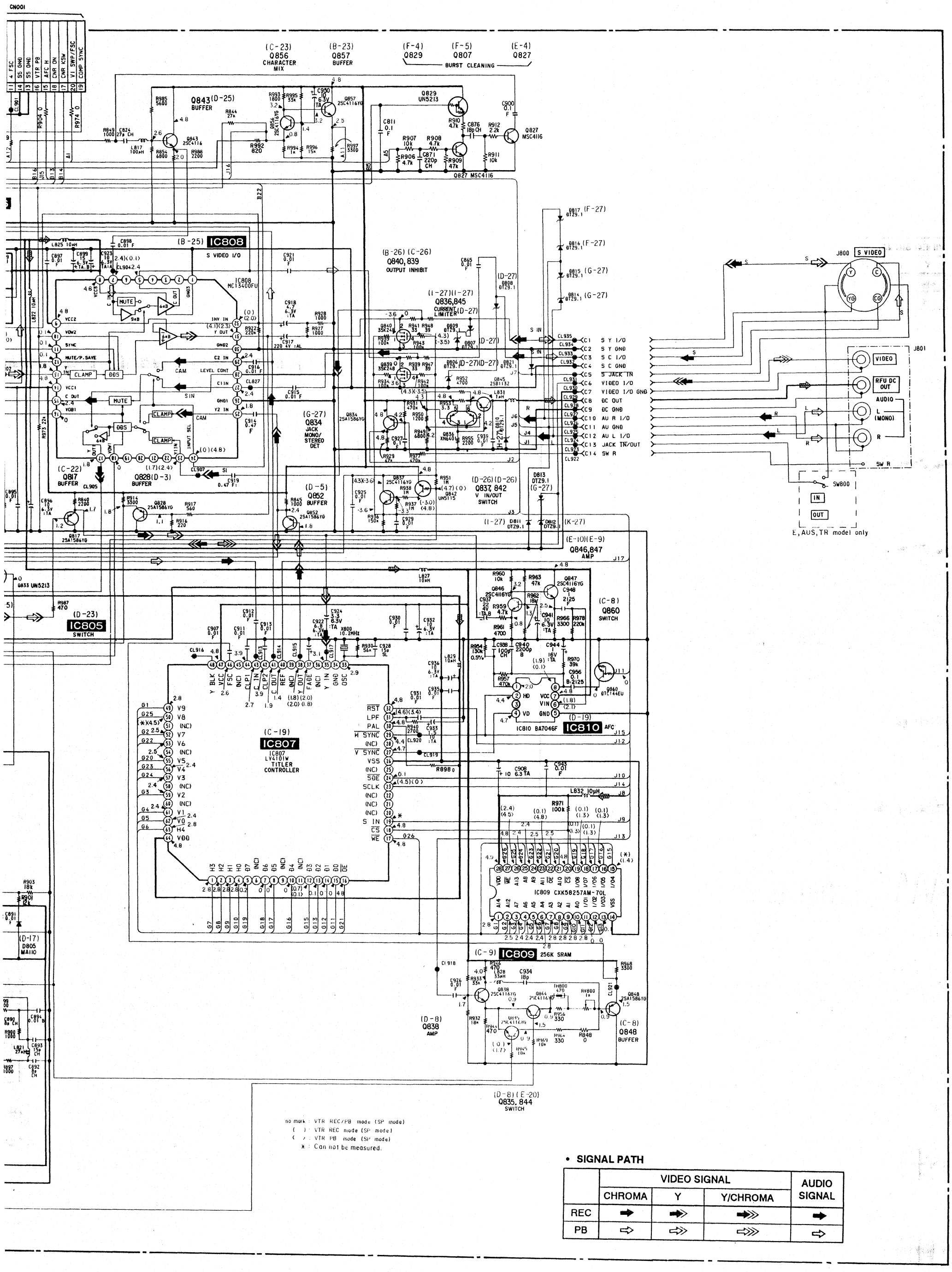
Q855 (C-12)

Q810 (B-13) BUFFER

Q811 BUFFER (C-12)

no mark : VTR REC/PB mode (SP
( ) : VTR REC mode (SP mod
< > : VTR PB mode (SP mod
* : Can not be measured.

153)



no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
< > : VTR PB mode (SP mode)
* : Can not be measured.

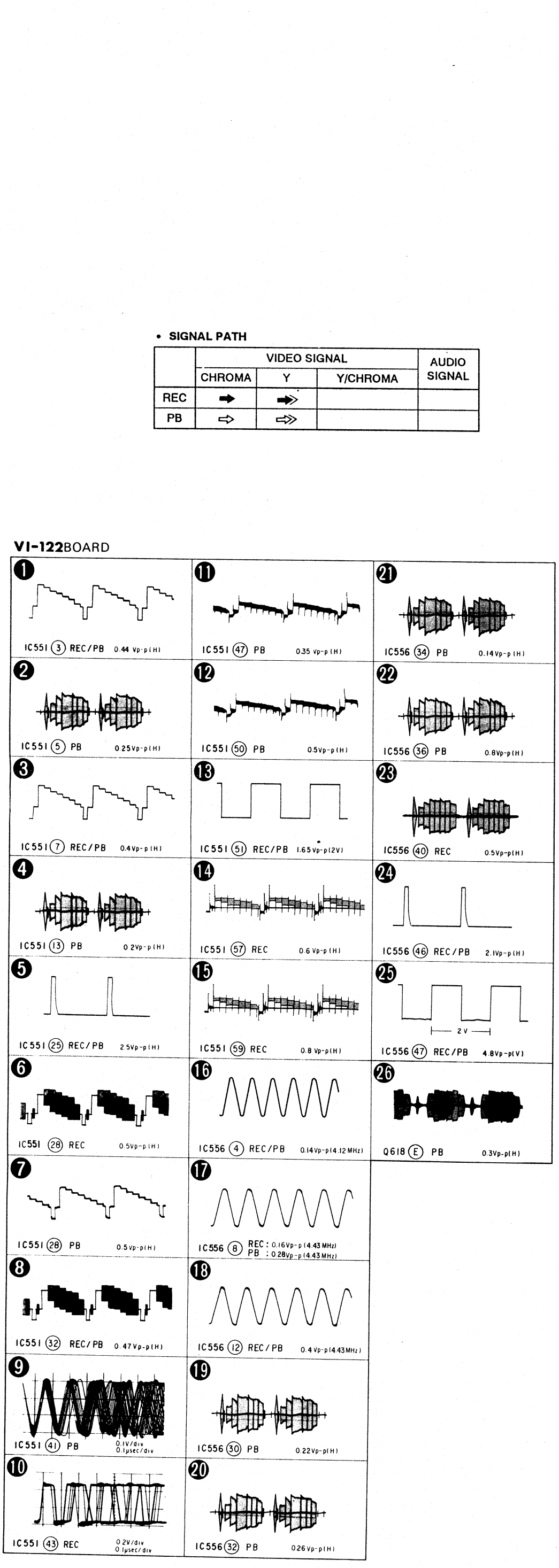
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB	⇨	⇨		

VI-122BOARD

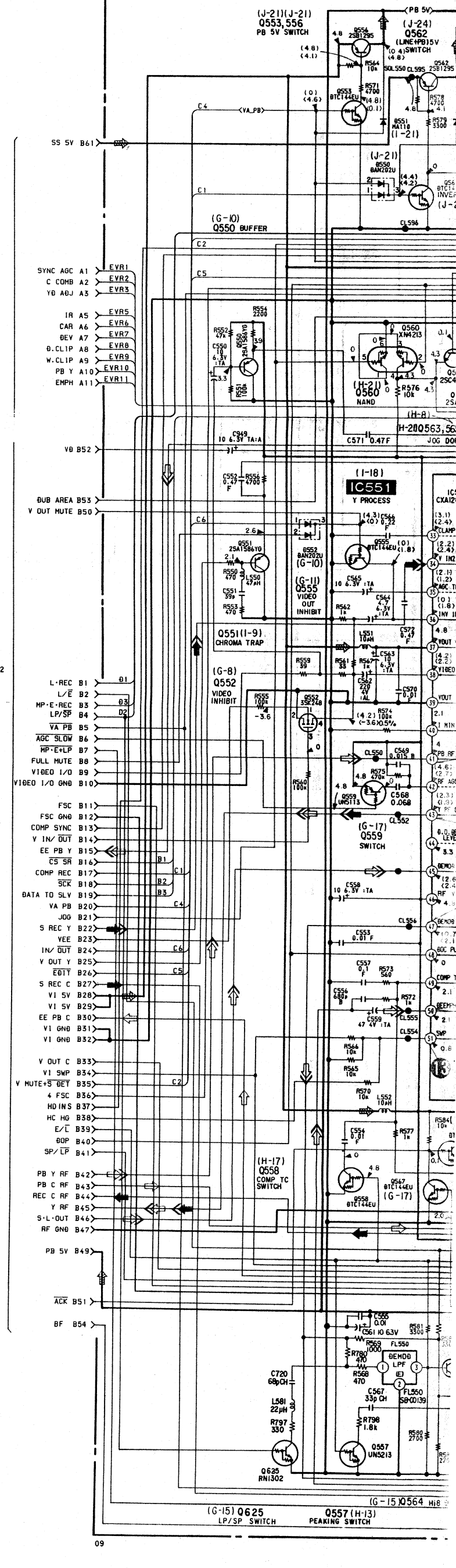

1 IC551 (3) REC/PB 0.44 Vp-p(H)
2 IC551 (5) PB 0.25Vp-p(H)
3 IC551 (7) REC/PB 0.4Vp-p(H)
4 IC551 (13) PB 0.2Vp-p(H)
5 IC551 (25) REC/PB 2.5Vp-p(H)
6 IC551 (28) REC 0.5Vp-p(H)
7 IC551 (28) PB 0.5Vp-p(H)
8 IC551 (32) REC/PB 0.47Vp-p(H)
9 IC551 (41) PB 0.1V/div 0.1μsec/div
10 IC551 (43) REC 0.2V/div 0.1μsec/div
11 IC551 (47) PB 0.35 Vp-p(H)
12 IC551 (50) PB 0.5Vp-p(H)
13 IC551 (51) REC/PB 1.65Vp-p(2V)
14 IC551 (57) REC 0.6 Vp-p(H)
15 IC551 (59) REC 0.8 Vp-p(H)
16 IC556 (4) REC/PB 0.14Vp-p(4.12 MHz)
17 IC556 (8) REC : 0.16Vp-p(4.43 MHz) PB : 0.28Vp-p(4.43 MHz)
18 IC556 (12) REC/PB 0.4 Vp-p(4.43 MHz)
19 IC556 (30) PB 0.22Vp-p(H)
20 IC556 (32) PB 0.26 Vp-p(H)
21 IC556 (34) PB 0.14Vp-p(H)
22 IC556 (36) PB 0.8Vp-p(H)
23 IC556 (40) REC 0.5Vp-p(H)
24 IC556 (46) REC/PB 2.1Vp-p(H)
25 IC556 (47) REC/PB 4.8Vp-p(V)
2 V
26 Q618 (E) PB 0.3Vp-p(H)

VI-122 (VIDEO) SCHEMATIC DIAGRAM

• Refer to page 138 for Printed Wiring Board.

— Ref. No. VI-122 BOARD: 5000 series —

VI-122BOARD(2/2)



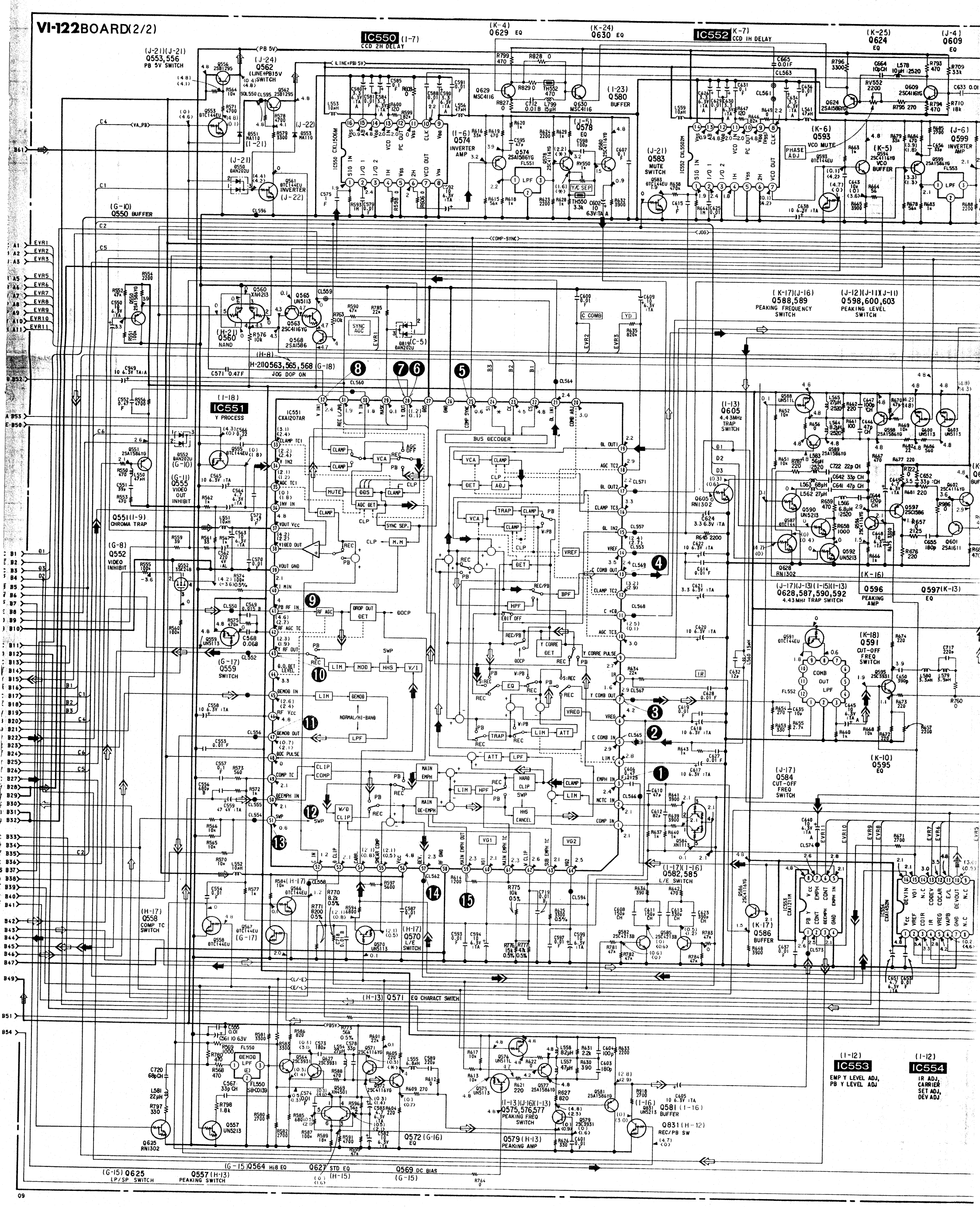
GRAM

• Refer to page 138 for Printed Wiring Board.

3 4 5 6 7 8 9 10 11 12 13 14

ries —

VI-122 BOARD (2/2)



IC552 (K-7) CCD 1H DELAY

(K-25) Q624 EQ

(J-4) Q609 EQ

Q626 (H-8) MODE SWITCH

(F-6) Q614 JOG SWITCH

(H-5) Q616 AMP

(G-6) Q618 PB CHROMA BUFFER

(G-7) IC555 JOG CHROMA PROCESS

(H-7) Q613 LPF ON/OFF SWITCH

(G-5XG-5) Q620,622 PAL SEC SWITCH

(K-6) Q593 VCO MUTE

(K-5) Q594 VCO BUFFER

(J-6) Q599 INVERTER AMP

(J-23) Q604 BUFFER

(K-16) Q602 BUFFER

(K-12) Q601 ON/OFF SWITCH

(K-17)(J-16) Q588,589 PEAKING FREQUENCY SWITCH

(J-12)(J-11)(J-11) Q598,600,603 PEAKING LEVEL SWITCH

(I-13) Q605 4.43MHz TRAP SWITCH

(J-17)(J-13)(I-15)(I-13) Q628,587,590,592 4.43MHz TRAP SWITCH

Q596 PEAKING AMP

Q597 (K-13) EQ

(K-18) Q591 CUT-OFF FREQ SWITCH

(K-10) Q595 EQ

(J-17) Q584 CUT-OFF FREQ SWITCH

(K-17) Q586 BUFFER

(F-5) Q607 BUFFER

(F-5) Q608 REC CHROMA BUFFER

(F-25) Q610 LPF

(F-25) D555 MA110

(G-25) D556 MA110

(F-6) D557 MA110

Q626 UN5213

Q613 UN5213

Q622 UN5213

Q623 UN5113

Q621 (H-24) BPF FREQ SWITCH

(I-4) Q623 SWITCH

(I-3)(I-4) Q615,619 FSC BUFFER

(G-4) IC556 CHROMA PROCESS

(E-24) Q606,612 (F-5) LPF

(I-12) IC553 EMP Y LEVEL ADJ, PB Y LEVEL ADJ

(I-12) IC554 IR ADJ, CARRIER SET ADJ, DEV ADJ

No mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
( ) : VTR REC mode (SP mode)
* : Can not be measured.

(CNR) PRINTED WIRING BOARD

No. CR-42 BOARD: 5000 series —

< DIODE >

D001	8-719-031-93	DIODE	MA714
D002	8-719-031-93	DIODE	MA714

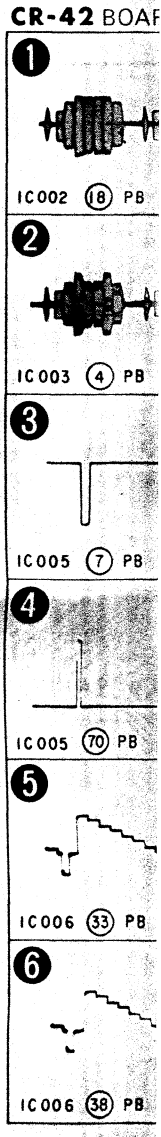
< IC >

IC001	8-759-062-99	IC	M5M4C500AVP-5
IC002	8-759-631-85	IC	M52678FP
IC003	8-759-063-02	IC	M52679VP
IC004	8-759-062-99	IC	M5M4C500AVP-5
IC005	8-759-163-83	IC	M65137FP
IC006	8-789-063-01	IC	MC141630FU
IC200	8-759-058-57	IC	TC7S04FU

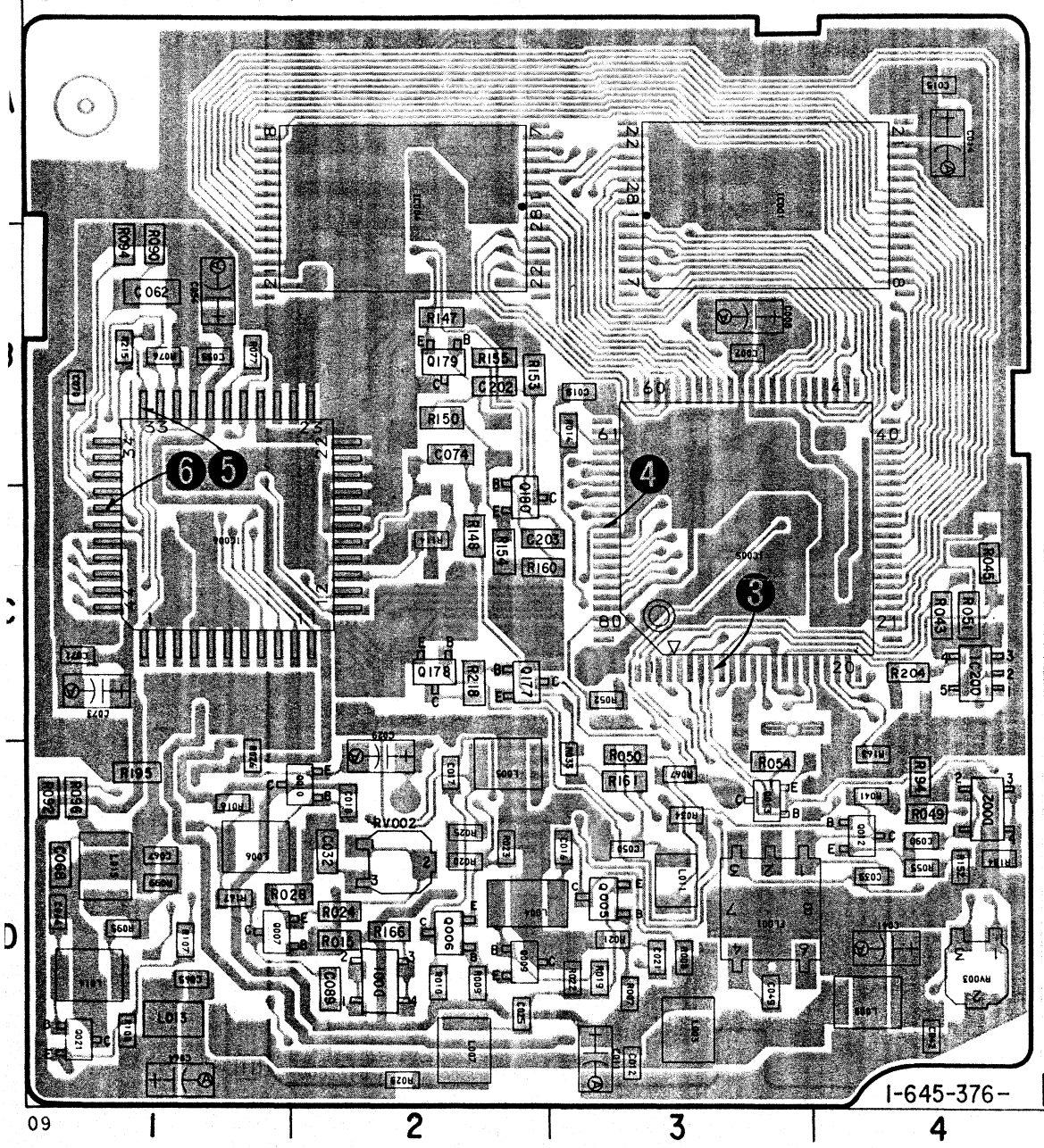
< TRANSISTOR >

Q001	8-729-141-48	TRANSISTOR	2SB624-BV345
Q002	8-729-402-45	TRANSISTOR	UN5212
Q003	8-729-141-48	TRANSISTOR	2SB624-BV345
Q004	8-729-402-45	TRANSISTOR	UN5212
Q005	8-729-010-75	TRANSISTOR	MSC4116-BC
Q006	8-729-010-75	TRANSISTOR	MSC4116-BC
Q007	8-729-010-75	TRANSISTOR	MSC4116-BC
Q008	8-729-010-60	TRANSISTOR	MSA1586-BC
Q009	8-729-010-60	TRANSISTOR	MSA1586-BC
Q010	8-729-010-75	TRANSISTOR	MSC4116-BC
Q011	8-729-010-60	TRANSISTOR	MSA1586-BC
Q012	8-729-010-75	TRANSISTOR	MSC4116-BC
Q013	8-729-402-45	TRANSISTOR	UN5212
Q021	8-729-010-60	TRANSISTOR	MSA1586-BC
Q022	8-729-010-60	TRANSISTOR	MSA1586-BC
Q026	8-729-010-75	TRANSISTOR	MSC4116-BC
Q170	8-729-010-60	TRANSISTOR	MSA1586-BC
Q172	8-729-402-87	TRANSISTOR	XN2401
Q173	8-729-402-13	TRANSISTOR	XN1501
Q174	8-729-402-84	TRANSISTOR	XN4601
Q175	8-729-010-75	TRANSISTOR	MSC4116-BC
Q176	8-729-402-84	TRANSISTOR	XN4601
Q177	8-729-010-60	TRANSISTOR	MSA1586-BC
Q178	8-729-402-45	TRANSISTOR	UN5212
Q179	8-729-010-60	TRANSISTOR	MSA1586-BC
Q180	8-729-010-75	TRANSISTOR	MSC4116-BC

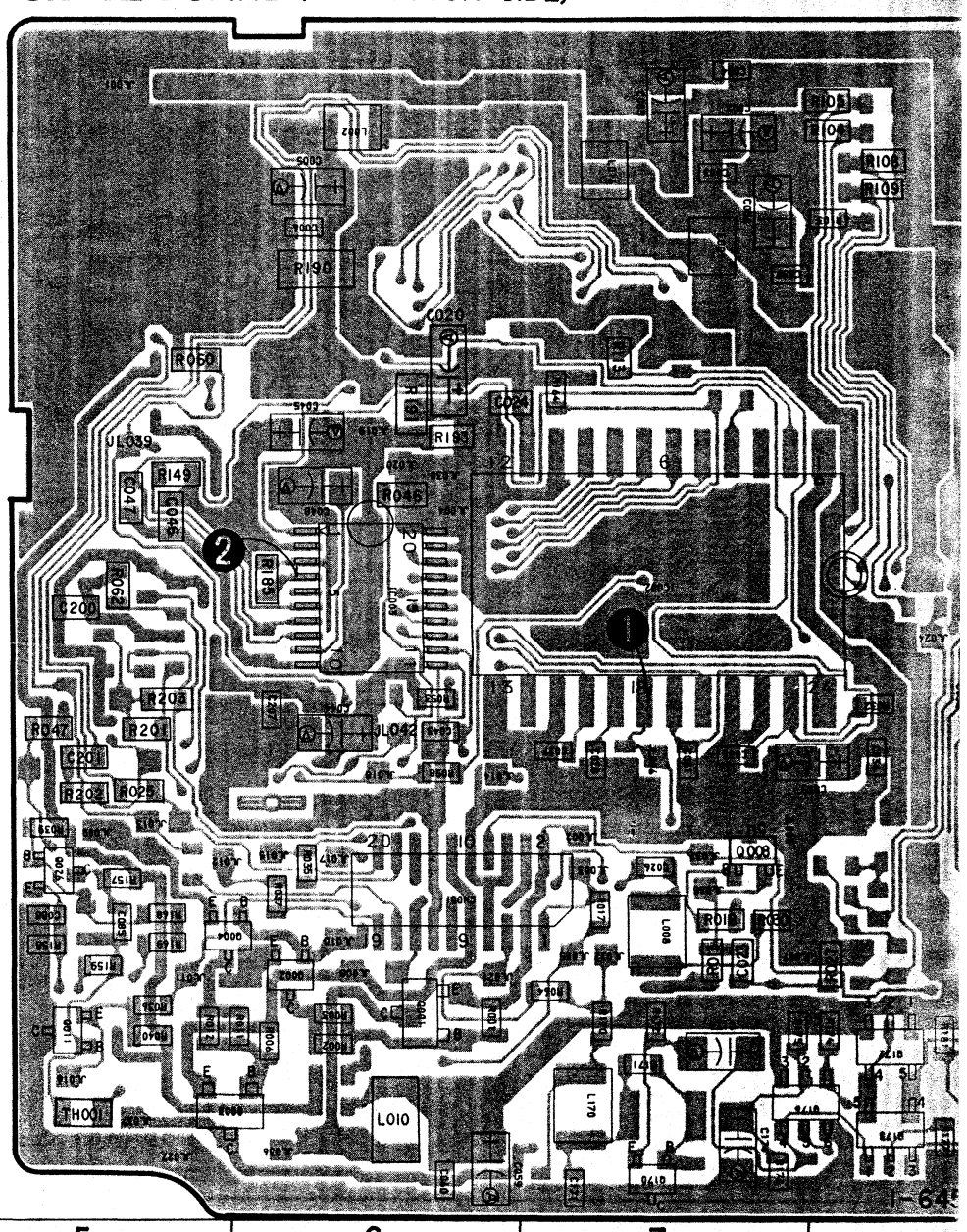
CR-42 BOAR



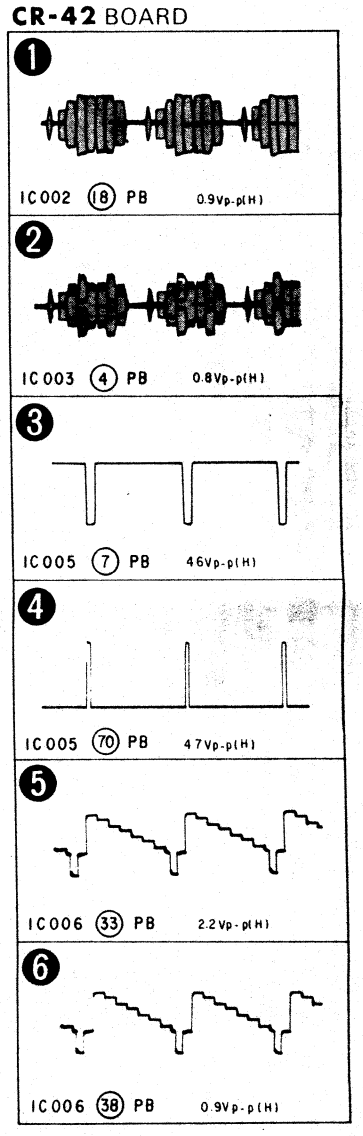
CR-42 BOARD (COMPONENT SIDE)



CR-42 BOARD (CONDUCTOR SIDE)



CR-42 BOARD



< DIODE >

8-719-031-93	DIODE	MA714
8-719-031-93	DIODE	MA714

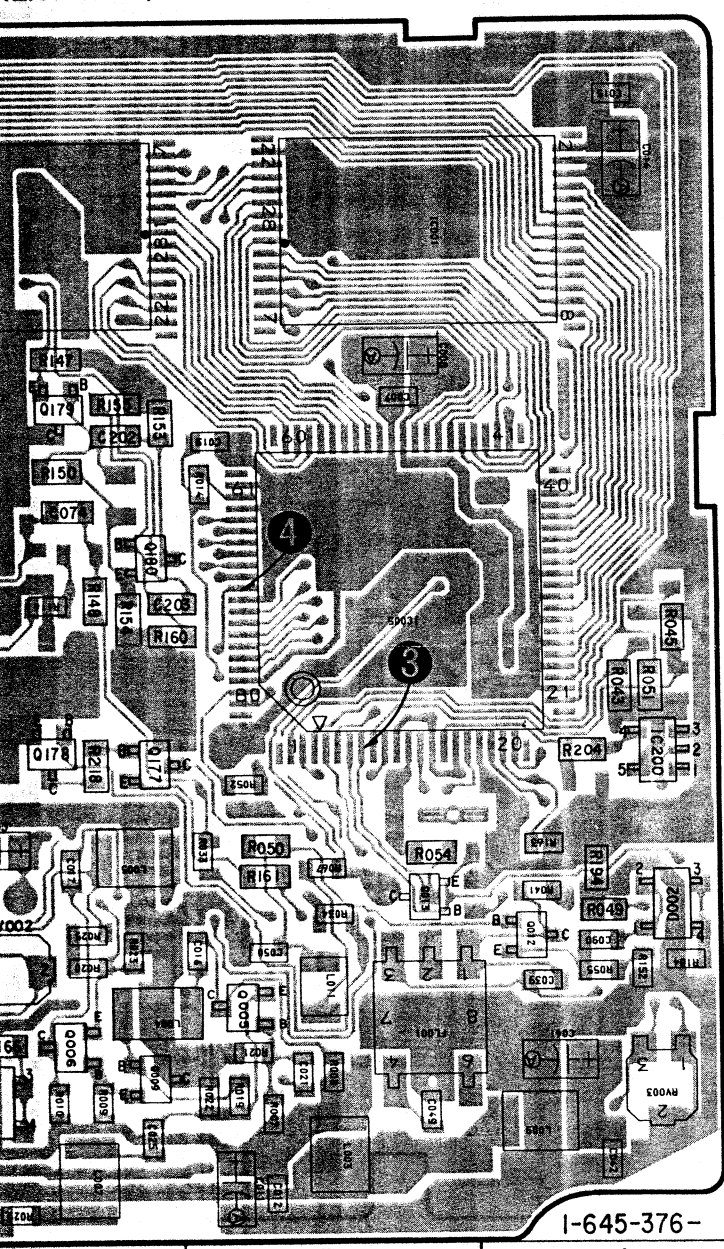
< IC >

8-759-062-99	IC	M5M4C500AVP-5
8-759-631-85	IC	M52678FP
8-759-063-02	IC	M52679VP
8-759-062-99	IC	M5M4C500AVP-5
8-759-163-83	IC	M65137FP
8-789-063-01	IC	MC141630FU
8-759-058-57	IC	TC7S04FU

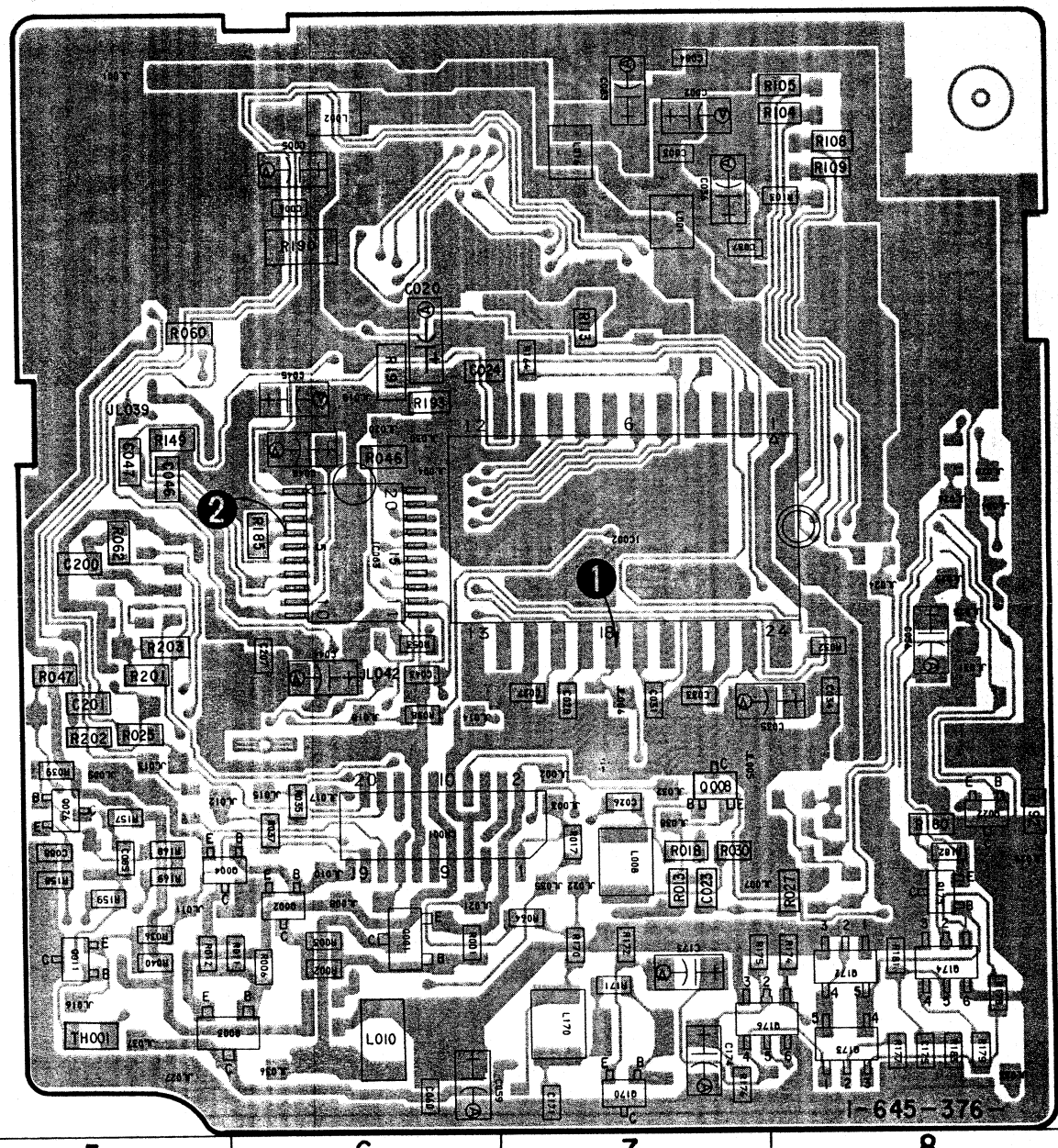
< TRANSISTOR >

Q001	8-729-141-48	TRANSISTOR	2SB624-BV345
Q002	8-729-402-45	TRANSISTOR	UN5212
Q003	8-729-141-48	TRANSISTOR	2SB624-BV345
Q004	8-729-402-45	TRANSISTOR	UN5212
Q005	8-729-010-75	TRANSISTOR	MSC4116-BC
Q006	8-729-010-75	TRANSISTOR	MSC4116-BC
Q007	8-729-010-75	TRANSISTOR	MSC4116-BC
Q008	8-729-010-60	TRANSISTOR	MSA1586-BC
Q009	8-729-010-60	TRANSISTOR	MSA1586-BC
Q010	8-729-010-75	TRANSISTOR	MSC4116-BC
Q011	8-729-010-60	TRANSISTOR	MSA1586-BC
Q012	8-729-010-75	TRANSISTOR	MSC4116-BC
Q013	8-729-402-45	TRANSISTOR	UN5212
Q021	8-729-010-60	TRANSISTOR	MSA1586-BC
Q022	8-729-010-60	TRANSISTOR	MSA1586-BC
Q026	8-729-010-75	TRANSISTOR	MSC4116-BC
Q170	8-729-010-60	TRANSISTOR	MSA1586-BC
Q172	8-729-402-87	TRANSISTOR	XN2401
Q173	8-729-402-13	TRANSISTOR	XN1501
Q174	8-729-402-84	TRANSISTOR	XN4601
Q175	8-729-010-75	TRANSISTOR	MSC4116-BC
Q176	8-729-402-84	TRANSISTOR	XN4601
Q177	8-729-010-60	TRANSISTOR	MSA1586-BC
Q178	8-729-402-45	TRANSISTOR	UN5212
Q179	8-729-010-60	TRANSISTOR	MSA1586-BC
Q180	8-729-010-75	TRANSISTOR	MSC4116-BC

NENT SIDE)

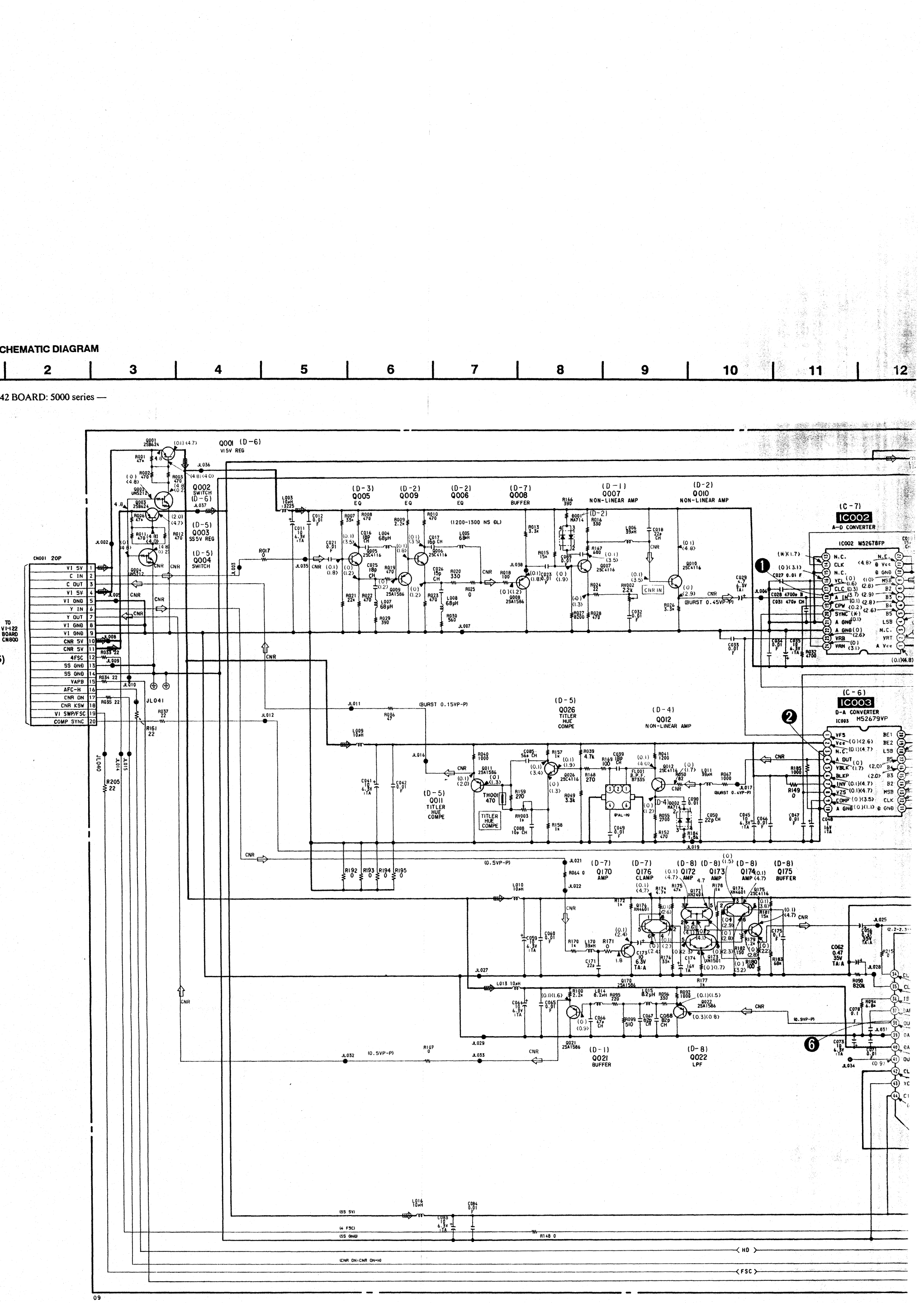


CR-42 BOARD (CONDUCTOR SIDE)



CR-42 (CNR) SCHEMATIC DIAGRAM

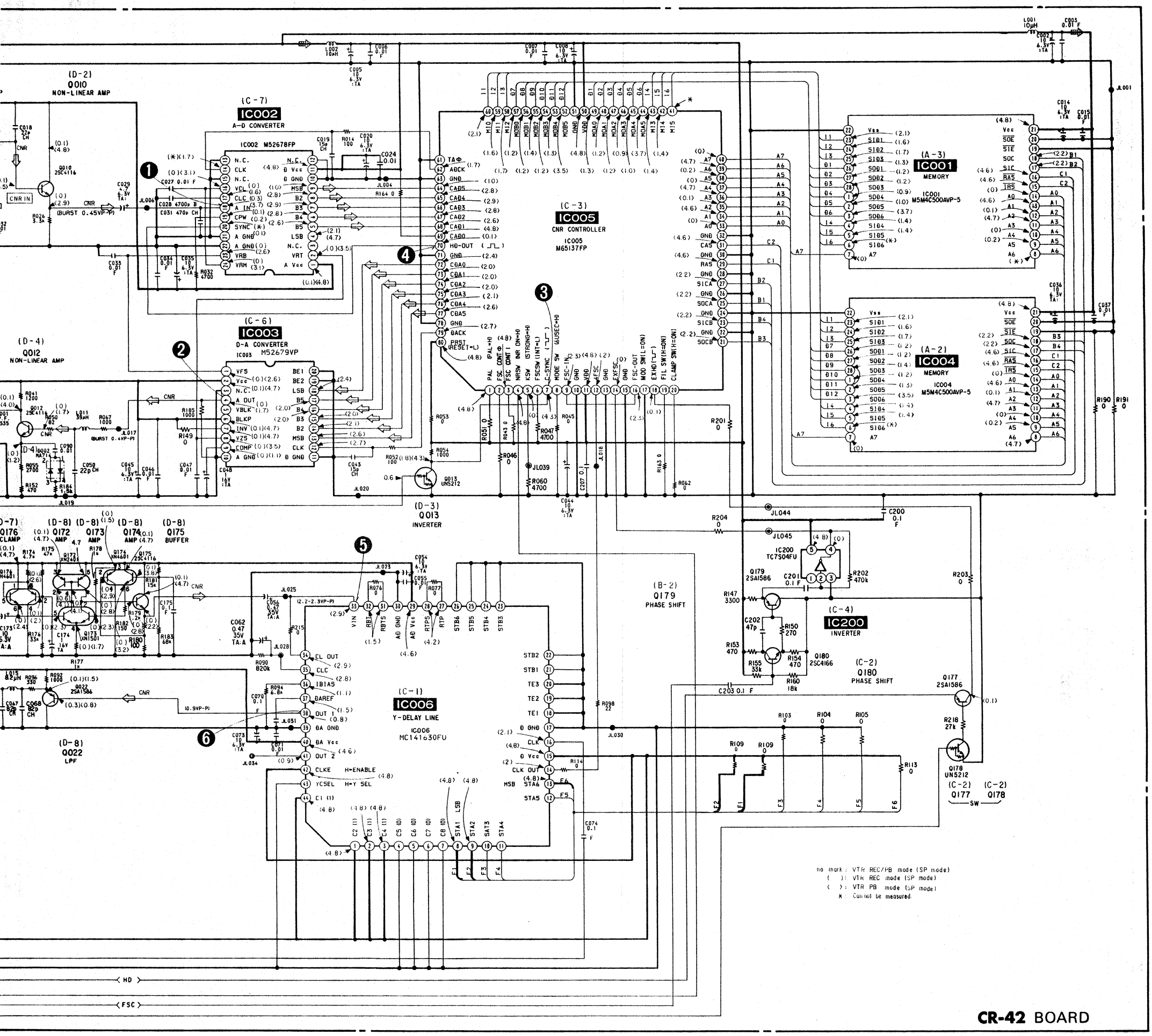
— Ref. No. CR-42 BOARD: 5000 series —



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨			

9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20



no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
( ) : VTR PB mode (SP mode)
* : Cannot be measured.

CR-42 BOARD

SA-49 (REC/PB AMP, MARKER, CHARACTER GENERATOR, SERVO/SYSTEM CONTROL, MODE CONTROL, AUDIO) PRINTED WIRING BOARD

— Ref. No. SA-49 BOARD: 4000 series —

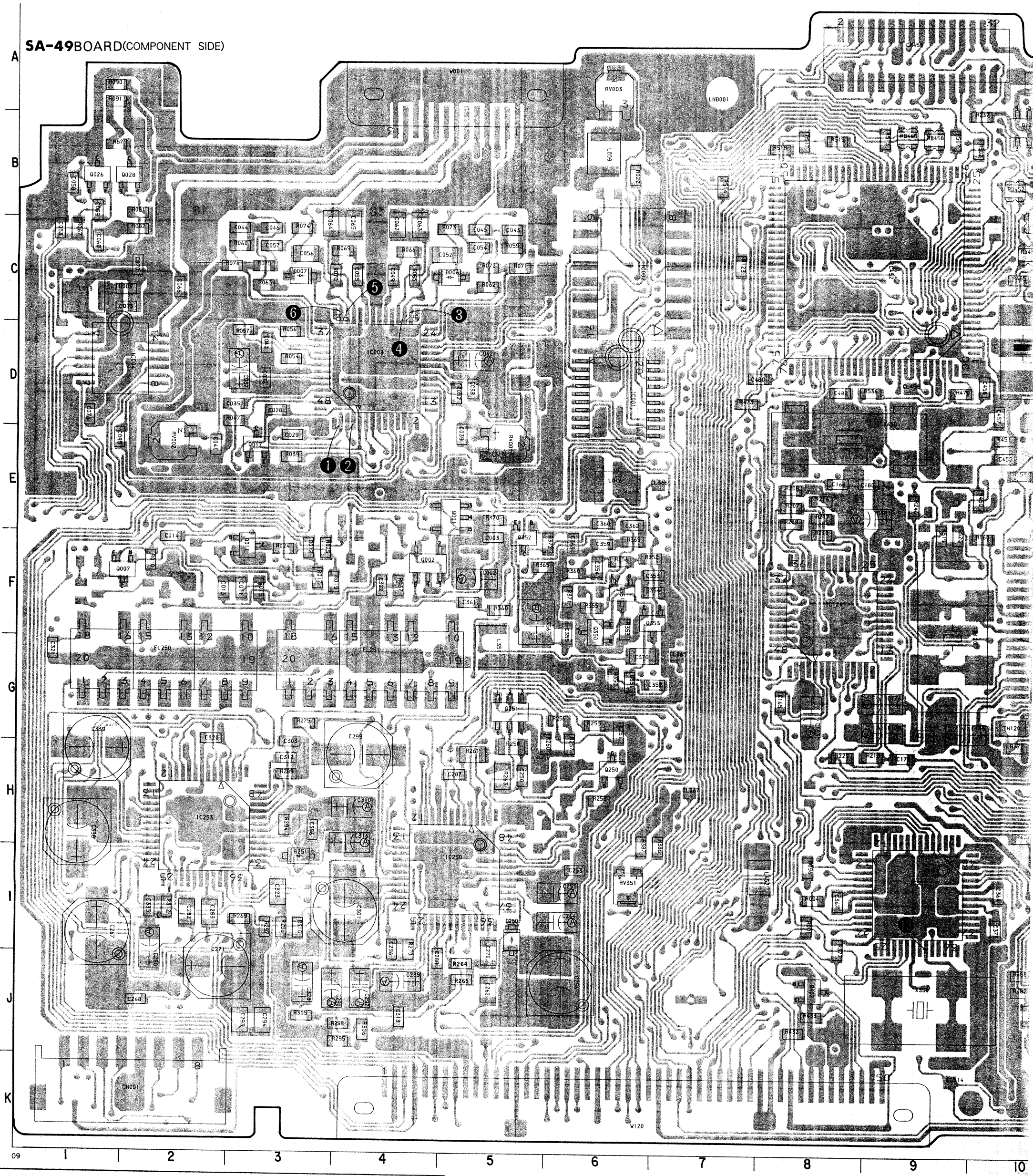
< DIODE >

D002	8-719-404-35	DIODE	MA141WK
D004	8-719-404-35	DIODE	MA141WK
D005	8-719-404-35	DIODE	MA141WK
D006	8-719-404-46	DIODE	MA110
D007	8-719-404-46	DIODE	MA110
D120	8-719-404-35	DIODE	MA141WK
D121	8-719-404-46	DIODE	MA110
D250	8-719-027-65	DIODE	MA8075-10
D251	8-719-027-65	DIODE	MA8075-10
D350	8-719-404-46	DIODE	MA110
D400	8-719-949-46	DIODE	1T32
D401	8-719-800-76	DIODE	1SS226
⚠D450	8-719-421-27	DIODE	MA728

< IC

IC001	8-759-064-36	IC
IC002	8-759-300-71	IC
IC003	8-752-033-00	IC
IC004	8-759-148-49	IC
IC120	8-752-841-25	IC
IC121	8-759-990-55	IC
IC123	8-759-039-01	IC
IC124	8-759-059-42	IC
IC250	8-759-823-19	IC
IC251	8-759-823-21	IC

SA-49 BOARD (COMPONENT SIDE)



A B C D E F G H I J K

09 1 2 3 4 5 6 7 8 9 10

RF AMP, MARKER, CHARACTER GENERATOR, SERVO/SYSCON, MODE CONTROL, AUDIO

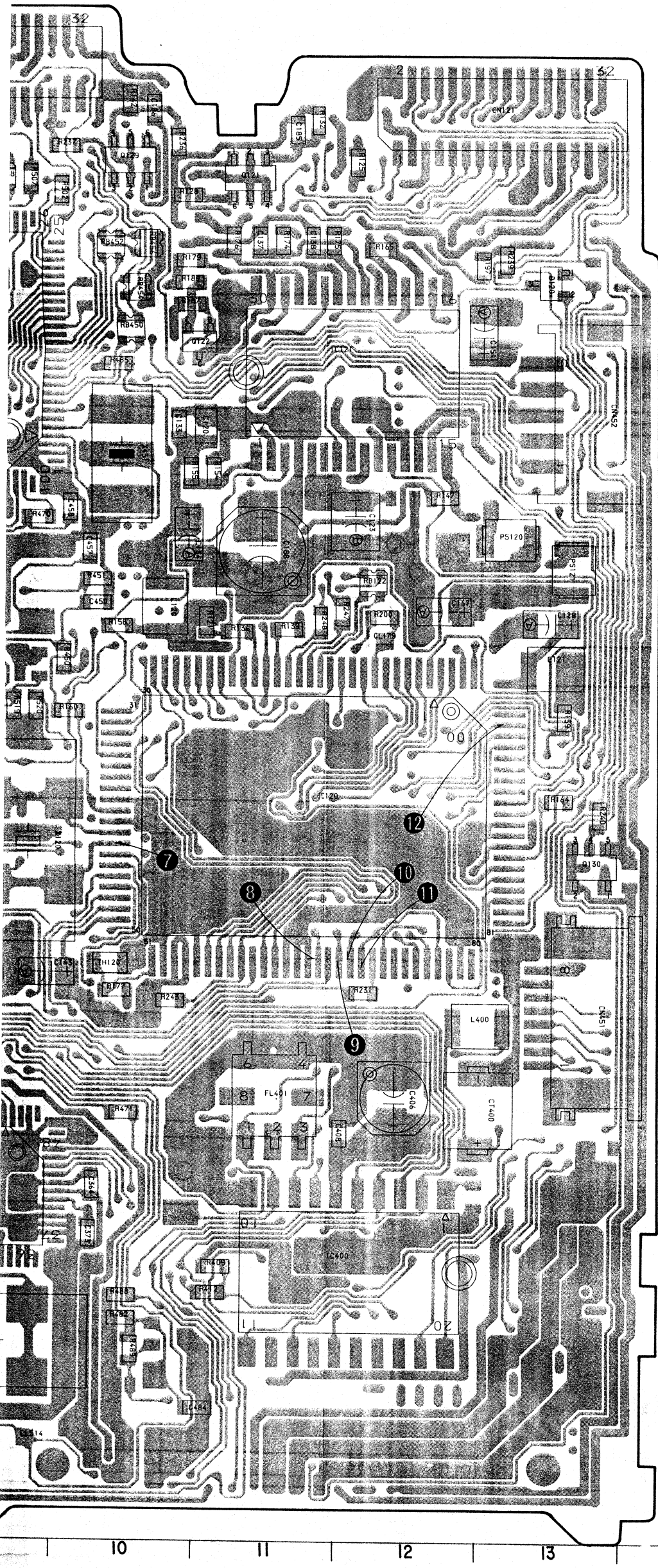
< IC >

8-759-064-36	IC	MB88346BPFV	IC252	8-759-008-67	IC	MC14066BF	IC455	8-759-044-78	IC	AK6420F
8-759-300-71	IC	HD14053BFP	IC253	8-759-823-19	IC	CXA1488R	IC456	8-759-064-36	IC	MB88346BPFV
8-752-033-00	IC	CXA1234AR	IC350	8-752-010-20	IC	CX20102				
8-759-148-49	IC	CXA1443N	IC351	8-759-061-72	IC	CXD2120R				
8-752-841-25	IC	CXP80624-448Q	IC400	8-759-073-98	IC	uPD6453GT-621				
8-759-990-55	IC	CXA8006M	IC401	8-759-970-80	IC	MB673198U				
8-759-039-01	IC	MPC1720M	IC402	8-759-082-61	IC	TC4W53FU				
8-759-059-42	IC	CXA1481AR	⚠IC451	8-759-056-8ـIC		S-8420AF				
8-759-823-19	IC	CXA1488R	IC452	8-759-155-73	IC	MB89093PFV-G-118-BND				
8-759-823-21	IC	CXA1536Q	IC454	8-759-999-02	IC	TL1596CDB				

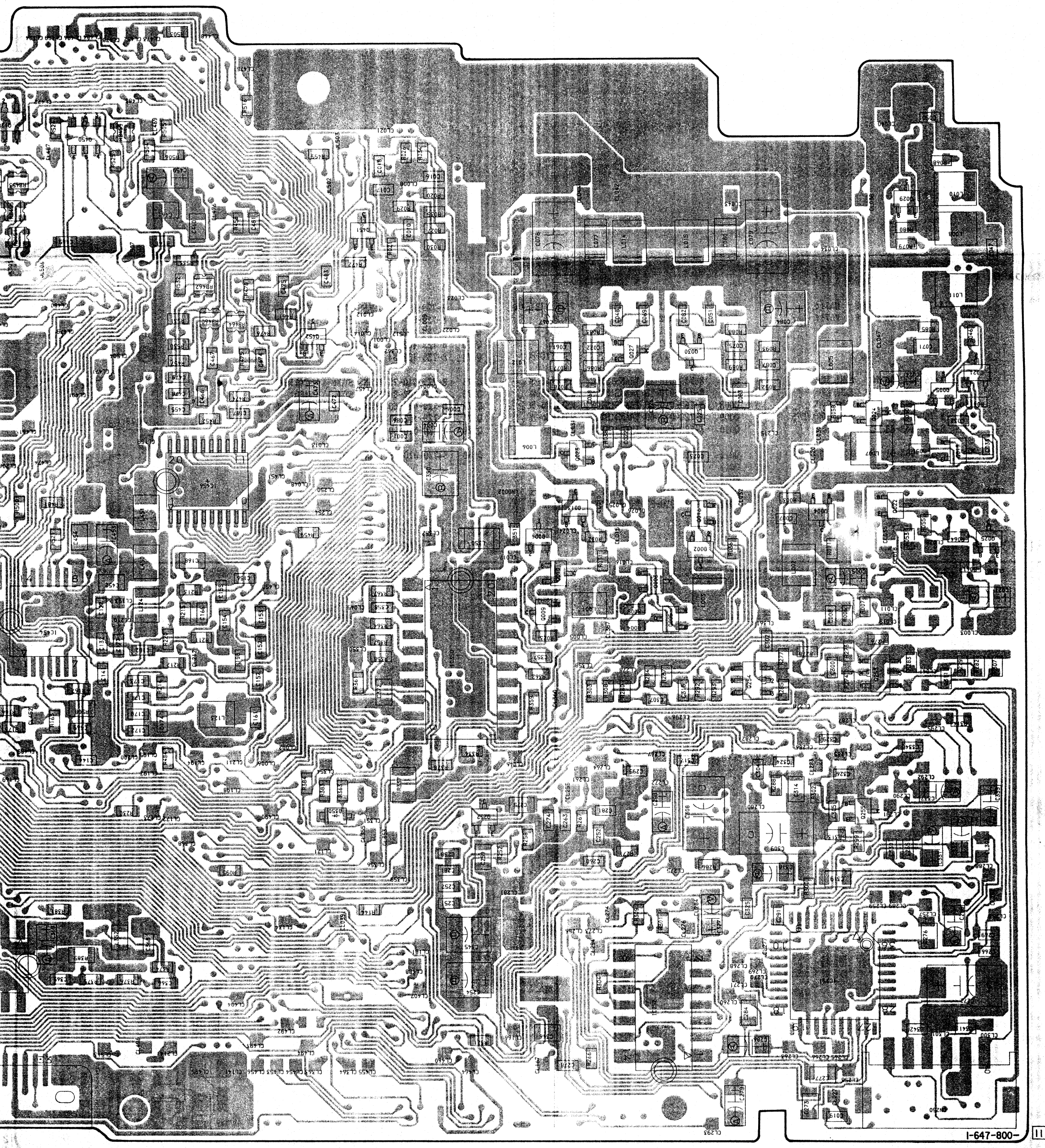
< TRANSISTOR >

Q001	8-729-403-07	TRANSISTOR	XN1213	Q016	8-729-010-75	TRANSI		
Q002	8-729-403-06	TRANSISTOR	XN1113	Q017	8-729-402-42	TRANSI		
Q003	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q019	8-729-140-63	TRANSI		
Q004	8-729-010-75	TRANSISTOR	MSC4116-BC	Q021	8-729-402-42	TRANSI		
Q005	8-729-402-42	TRANSISTOR	UN5213	Q022	8-729-010-75	TRANSI		
Q007	8-729-010-75	TRANSISTOR	MSC4116-BC	Q023	8-729-010-75	TRANSI		
Q009	8-729-402-42	TRANSISTOR	UN5213	Q024	8-729-010-75	TRANSI		
Q010	8-729-421-26	TRANSISTOR	UN5216QRS	Q025	8-729-010-75	TRANSI		
Q011	8-729-402-42	TRANSISTOR	UN5213	Q026	8-729-140-63	TRANSI		
Q013	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q027	8-729-117-72	TRANSI		

SA-49 BOARD (CONDUCTOR SIDE)



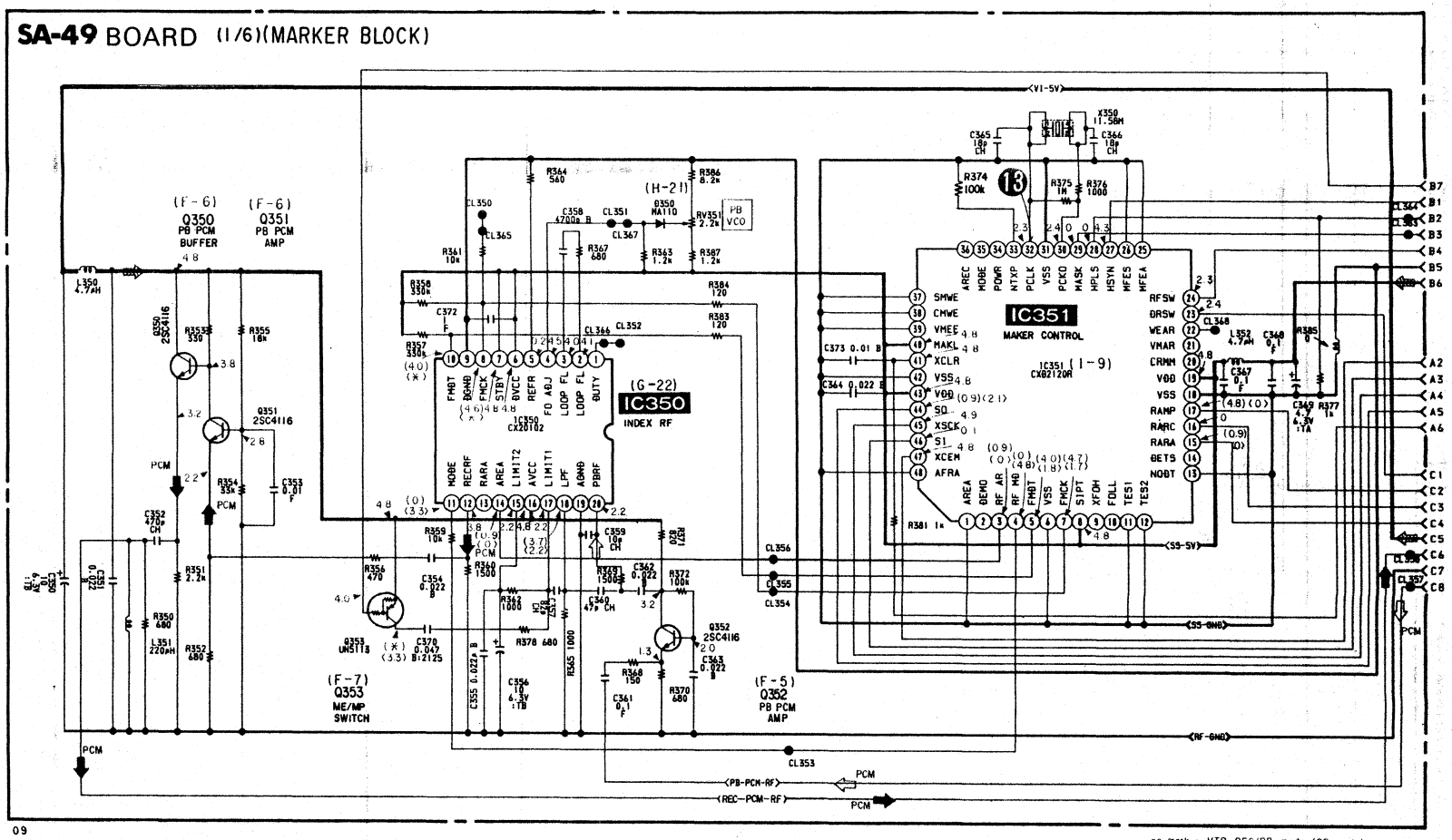
16	8-729-010-75	TRANSISTOR	MSC4116-BC	Q028	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q250	8-729-402-42	TRANSISTOR	UN5213	Q402	8-729-010-75	TRANSISTOR	MSC4116-BC
17	8-729-402-42	TRANSISTOR	UN5213	Q029	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q251	8-729-402-81	TRANSISTOR	XN4501	Q450	8-729-403-10	TRANSISTOR	XN6215
19	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q030	8-729-117-72	TRANSISTOR	2SC4178	Q252	8-729-402-42	TRANSISTOR	UN5213	Q451	8-729-402-42	TRANSISTOR	UN5213
21	8-729-402-42	TRANSISTOR	UN5213	Q120	8-729-015-76	TRANSISTOR	UN5211	Q253	8-729-402-81	TRANSISTOR	XN4501	Q452	8-729-403-35	TRANSISTOR	UN5113
22	8-729-010-75	TRANSISTOR	MSC4116-BC	Q121	8-729-403-27	TRANSISTOR	XN4401	Q254	8-729-402-81	TRANSISTOR	XN4501				
23	8-729-010-75	TRANSISTOR	MSC4116-BC	Q122	8-729-010-75	TRANSISTOR	MSC4116-BC	Q255	8-729-010-60	TRANSISTOR	MSA1586-BC				
24	8-729-010-75	TRANSISTOR	MSC4116-BC	Q125	8-729-822-84	TRANSISTOR	2SB1202FAST	Q350	8-729-010-75	TRANSISTOR	MSC4116-BC				
25	8-729-010-75	TRANSISTOR	MSC4116-BC	Q128	8-729-402-81	TRANSISTOR	XN4501	Q351	8-729-010-75	TRANSISTOR	MSC4116-BC				
26	8-729-140-63	TRANSISTOR	2SA1611-M5M6	Q129	8-729-402-81	TRANSISTOR	XN4501	Q352	8-729-010-75	TRANSISTOR	MSC4116-BC				
27	8-729-117-72	TRANSISTOR	2SC4178	Q130	8-729-403-42	TRANSISTOR	XN1401	Q353	8-729-403-35	TRANSISTOR	UN5113				



SA-49 (REC/PB AMP, MARKER) SCHEMATIC DIAGRAM

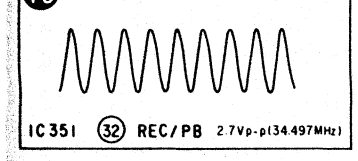
• Refer to page 156 for Printed Wiring Board.

— Ref. No. SA-49 BOARD: 4000 series —

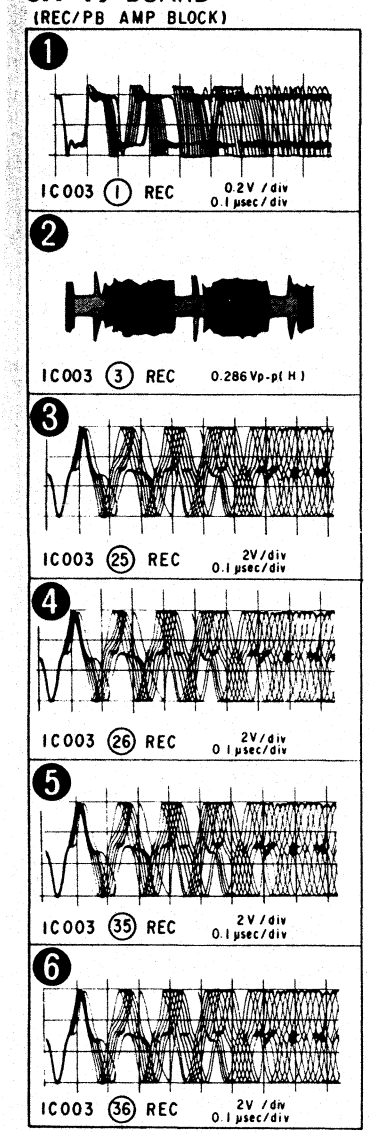


no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
< > : VTR PB mode (SP mode)
* : Can not be measured.

SA-49 BOARD (MARKER BLOCK)



SA-49 BOARD (REC/PB AMP BLOCK)



• **SIGNAL PATH**

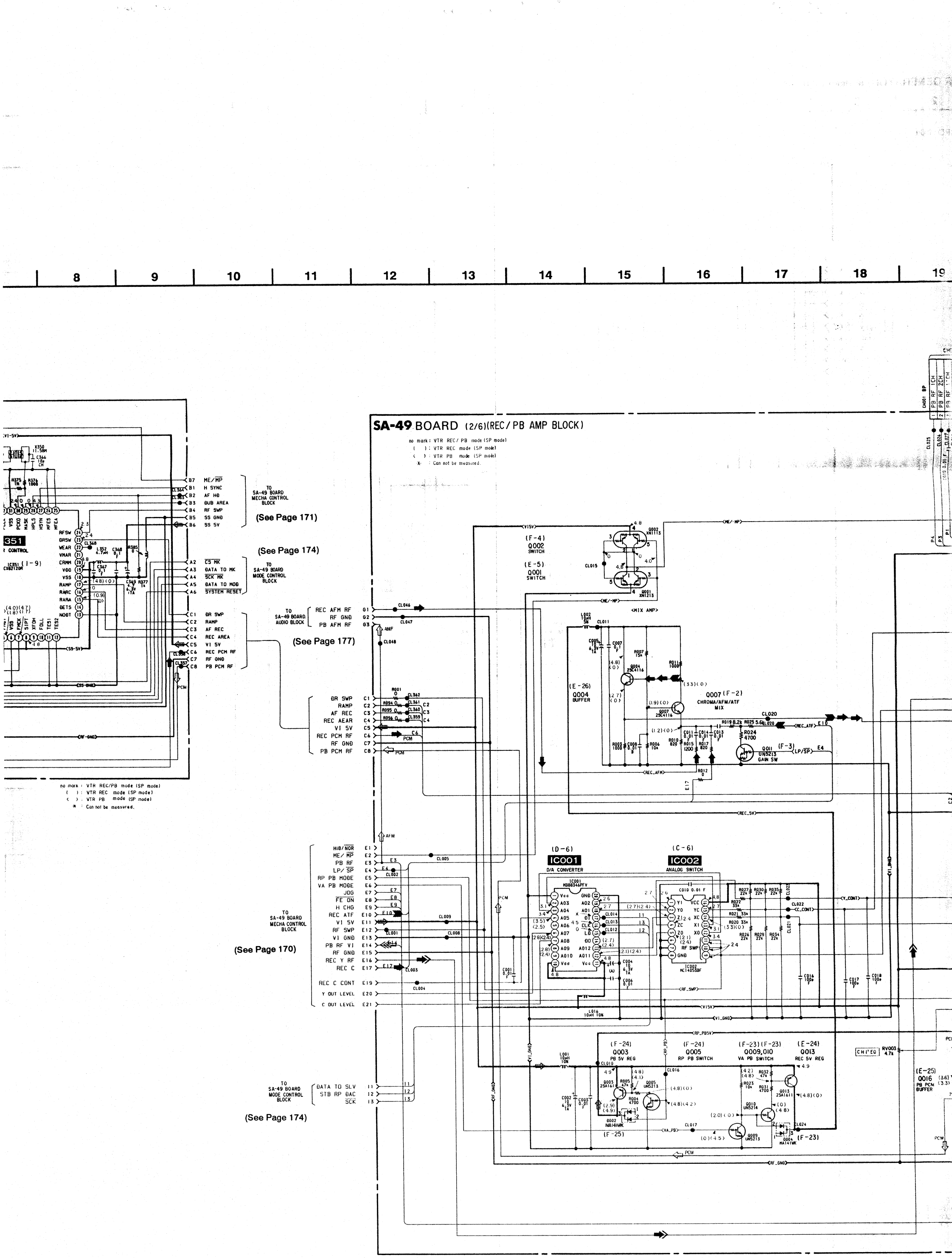
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB			⇨	⇨

• **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡		⇨

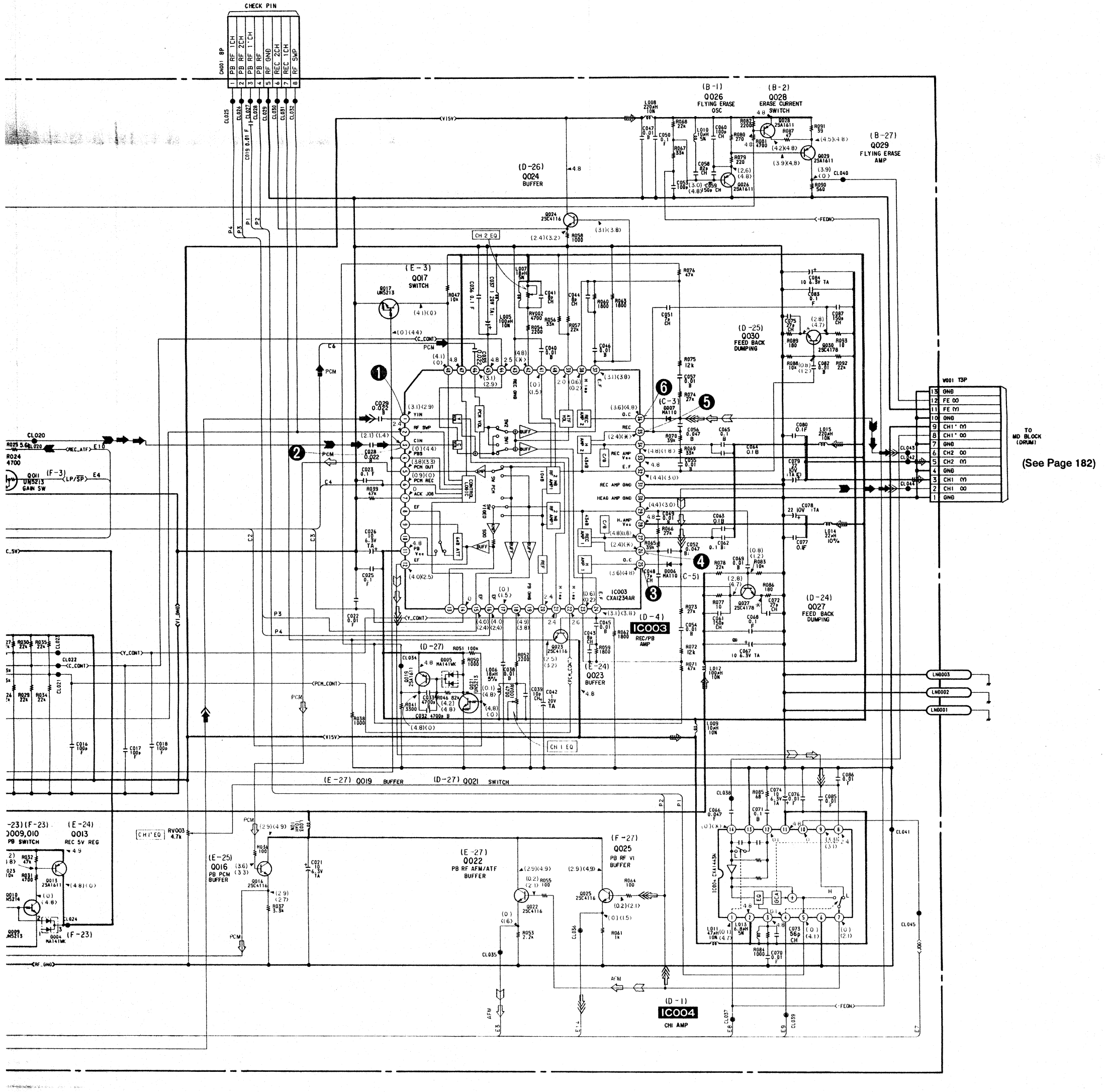
SA-49 BOARD (2/6)(REC/PB AMP BLOCK)

no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
< > : VTR PB mode (SP mode)
* : Can not be measured.



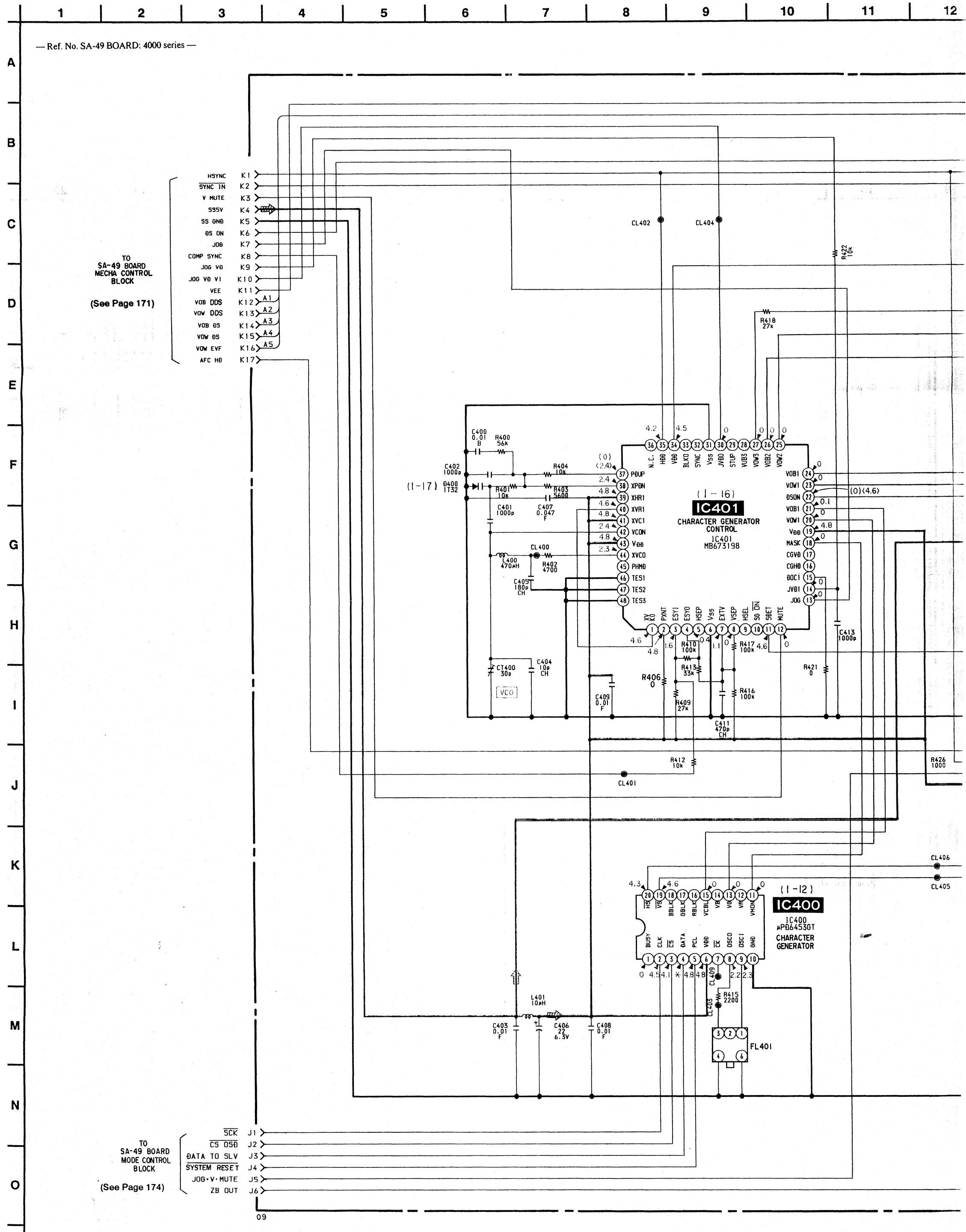
no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
< > : VTR PB mode (SP mode)
* : Can not be measured.

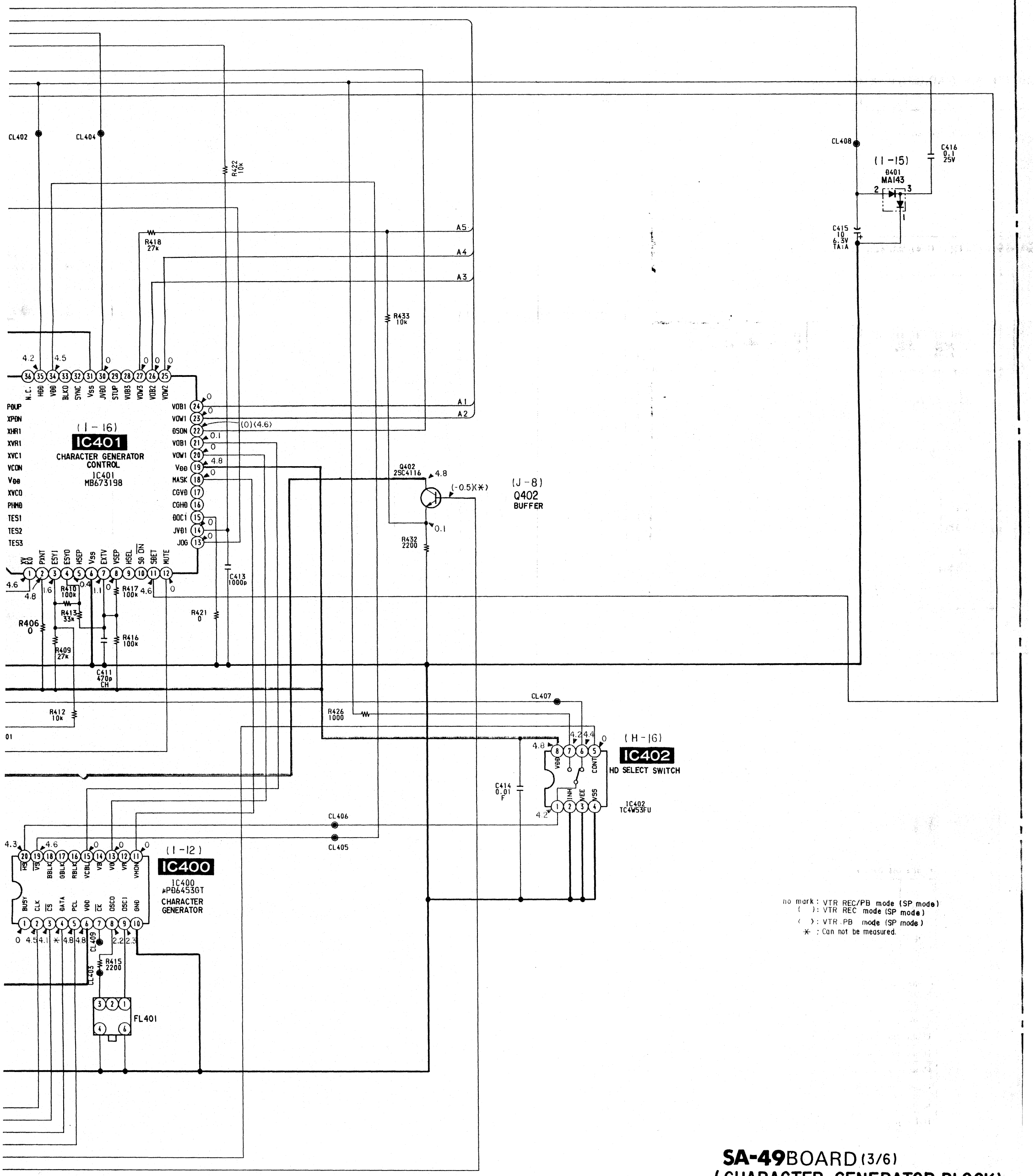
17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28



• Refer to page 156 for Printed Wiring Board.

— Ref. No. SA-49 BOARD: 4000 series —





no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
〈 〉 : VTR PB mode (SP mode)
* : Can not be measured.

SA-49 BOARD (3/6)
(CHARACTER GENERATOR BLOCK)

SA-49 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to page 156 for Printed Wiring Board.

— Ref. No. SA-49 BOARD: 4000 series —

(See Page 144)

TO VI-122 BOARD W801

W120 50P

CNR 5V
CNR 5V
TITLE LEVEL
VDW EVF
VI 5V
VI 5V
VI GND
VI GND
C OUT LEVEL
SS 5V
EVF VIDEO
SS GND
SS GND
VDB DBS
VDW DBS
VDB DS
VDW DS
DUB AREA
AF HD
CS SRAM
SCK
SYSTEM RESET
DATA TO SLV
AFC HD
CS S/P
STB V1 DAC
CS SR
CS TITLE
BACK UP DC
JACK IN /OUT
A JACK MONO/ ST
S JACK IN
H CHG
V1 SWP
JOG VC V1
COMP SYNC
VEE
H18/ NOR DET
Fsc
AU L I/O
Fsc GND
AU GND
AU R I/O
Y OUT LEVEL
REC C CONT
REC C
RF GND
REC Y RF
RF GND
PB RF V1

TO SA-49 BOARD MODE CONTROL BLOCK (See Page 172)

RF SWP F27
BACK UP DC F19
SCK F3
DATA TO SLVE F5
DATA TO MST F4
CS MECHACON F6
STB V1 DAC F8
CS S/P F9
CS SR F10
CS SRAM F11
CS TITLE F12
SYSTEM SYNC F15
SYSTEM RESET F7

UNREG F21
SS GND F23
VTR ON F15
CC DOWN F17
DEW SENS F16

EJECT SW F18
RF CONT F1
ATF CONT F2

UNREG GND F20
SS 5V F22
DEW SENS F24
BATT SENS F25

TITEL LEVEL F26
AU 5V F28
AU GND F29
FE ON F30
INT VD F31

CN121 32P

ENV SENS 1
SS GND 2
UNREG GND 3
CAP VS 4
MOTOR UNREG 5
CAP ON 6
CAP FWD/RVS 7
CAP FG 8
CC DOWN 9
DEW SENS 10
TOP SENS 11
M SW 0 12
M SW 1 13
M SW 2 14
T REEL FG 15
13μ/10μ 16
MP/HE 17
HG SW 18
REC PROOF 19
S REEL FG 20
MT 5V 21
REEL HALL CONT 22
TOP/END LED ON 23
COM (DRUM) 24
W 25
V 26
Ø PG 27
U 28
SS 5V 29
Ø FG 30
LOADØ 31
UNLOADØ 32

TO CC-74 BOARD W301 (FP-523) (See Page 181)

W451 (2/2)

EVF 5V 1
EVF GNØ 2
VI 5V 3
VI 5V 4
VI GNØ 5
VI GNØ 6
AU 5V 7
AU GNØ 8
SS 5V 9
CNR 5V 10
SS GNØ 11
CAP ERR 12
CAP VS 13
DRUM ERR 14
DRUM VS 15
VTR ON 16
MOTOR UNREG 17
MT UNREG GNØ 18
MT UNREG GNØ 19
VTR UNREG 20
EJECT SW 21

TO FU-107 BOARD CN251

(See Page 208)

IC120 SERVO, SYSTEM CONTROL IC120 CXP80624

IC121 CXA8006M LPF/DRUM MOTOR DRIVE

Q120 UN5211 TOP/END LED DRIVE

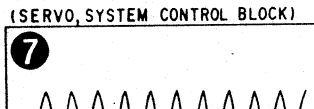
Q121 SILENCER

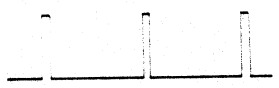
Q128 XN4501 SILENCER

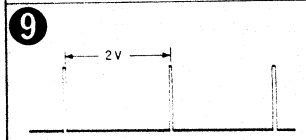
Q129 XN4501 SILENCER

Q130 XN1401 BUFFER

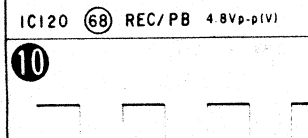
SA-49 BOARD
(SERVO, SYSTEM CONTROL BLOCK)

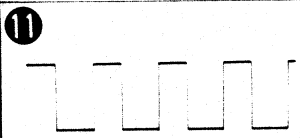
⑦

IC120 (43) REC/PB 3.5Vp-p(11.72MHz)

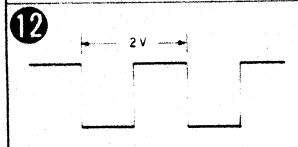
⑧

IC120 (66) REC/PB 2Vp-p(H)

⑨


IC120 (68) REC/PB 4.8Vp-p(V)

⑩

IC120 (69) REC/PB 4.8Vp-p(300Hz)

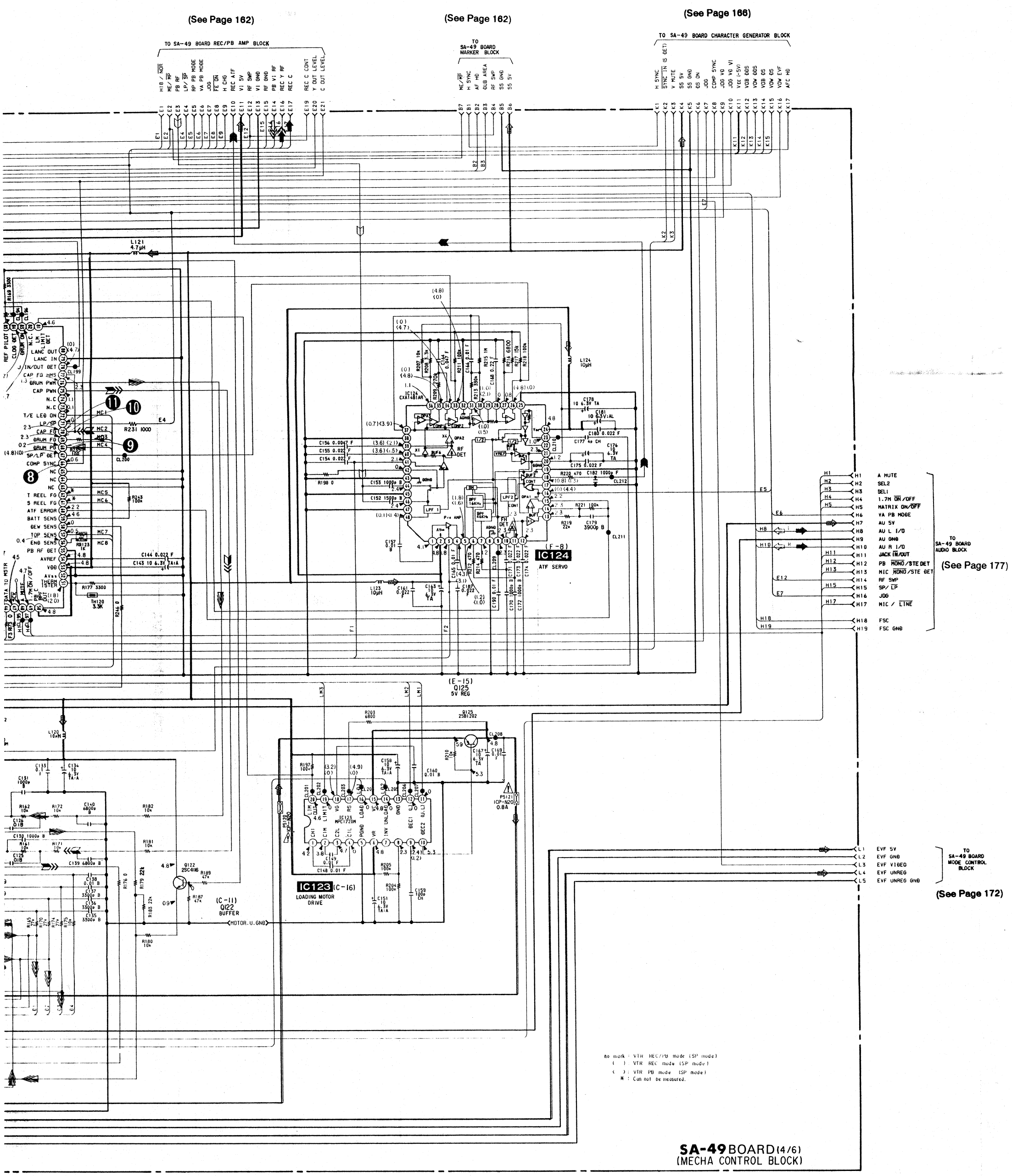
⑪

IC120 (70) REC/PB 4.8Vp-p(1390Hz)

⑫


IC120 (99) REC/PB 4.8Vp-p(V)

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20



• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		➡
PB			⇨	⇨

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo (speed and phase)		▷	
Capstan servo (speed and phase)		▷	
Ref. signal	▰		▱

SA-49 (MODE CONTROL) SCHEMATIC DIAGRAM

• Refer to page 156 for Printed Wiring Board.

— Ref. No. SA-49 BOARD: 4000 series —

(See Page 185, 195)

(See Page 196)

TO FD-47 BOARD CN341 and SW-203 BOARD CN361

CN456 32P

1	SS GND
2	DATA SW
3	SS 5V
4	TIME SW
5	CAM+STBY SW
6	SCK
7	START/STOP SW
8	DATA TO SLV
9	LANC DC
10	LCD CODE/DATA
11	LANC SIG
12	CS LCD
13	ZOOM COM
14	EVER 5V
15	N.C
16	K AD IN 3
17	STRES IN
18	K AD IN 4
19	EVF 5V
20	DIAL SIGNAL
21	EVF GND
22	AD GND
23	EVF VIDEO
24	SS 5V
25	TALLY LED
26	SS GND
27	CHASSIS GND
28	HP L OUT
29	HP GND
30	HP R OUT
31	EVF UNREG GND
32	EVF UNREG

TO FP-533 FLEXIBLE BOARD

CN451 8P

1	VTR MODE SW
2	CAM+STBY SW IN
3	CAM+STBY SW OUT
4	K AD IN 0
5	K AD IN 1
6	K AD IN 2
7	SS GND
8	CHASSIS GND

TO SA-49 BOARD MECHA CONTROL BLOCK

EVF UNREG GND	L5
EVF UNREG	L4
EVF VIDEO	L3
EVF GND	L2
EVF 5V	L1

(See Page 171)

RF CONT	F1
ATF CONT	F2
SCK	F3
DATA TO MST	F4
DATA TO SLVE	F5
CS MECHACON	F6
SYSTEM RESET	F7
STB VI DAC	F8
CS S/P	F9
CS SR	F10
CS SRAM	F11
CS TITLE	F12
SYSTEM SYNC	F13
VTR ON	F15
DEW SENS	F16
CC DOWN SW	F17
EJECT SW	F18
BACK UP DC	F19
UNREG GND	F20
UNREG	F21
SS 5V	F22
SS GND	F23
DEW SENS	F24
BATT SENS	F25
TITLE LEVEL	F26
RF SWP	F27
AU 5V	F28
AU GND	F29
FE ON	F30
INT VD	F31

TO SA-49 BOARD MECHA CONTROL BLOCK

(See Page 169)

Q452 UN5113 — Q452 (D-21) CAM D/D ON DRIVER

Q451 UN5213 — (C-22) Q451 CAM D/D ON DRIVER

(C-9) IC452

IC452 MB89093

74	DATA TO SLV
77	SCK
78	STB RP DAC
79	VTR DD ON
80	CAM DD ON
81	AVSS
82	K AD IN 0
83	K AD IN 1
84	K AD IN 2
85	K AD IN 3
86	K AD IN 4
87	DIAL SIGNAL
88	ZOOM COM
89	N.C
90	AVCC
91	BATT SENS
92	DEW SENS
93	LEVEL MTR L
94	LEVEL MTR R
95	LANC IN
96	LANC OUT
97	CLOCK 32K OUT
98	VCC
99	CL1
100	CL2
50	JOG·V·MUTE
49	AUDIO POWER SAVE
48	LCD C/D
47	LINE MIX
46	STB VI DAC
45	STB S/P
44	CS LCD
43	CS MK
42	CS SRAM
41	CS TITLE
40	CS SR
39	CS EEPROM
38	CS CAMERA
37	STB SA DAC
36	SIRCS IN
35	SCK MK
34	DATA TO MK
33	DATA TO MDD
32	CLCK 8M/32K
31	A/D GND
30	SYSTEM RESET
29	TALLY LED
28	RF SWP
27	FE ON
26	LANC POWER ON
25	L1 PRE END
24	SYSTEM SYNC
23	BATT IN
22	CAM+STBY SW
21	CC DOWN SW
20	START-STOP SW
19	VTR MODE SW
18	EJECT SW
17	TIME SW
16	DATE SW
15	RESET
14	VSS
13	X1
12	X0
11	MOD1
10	MOD0

(F-19) IC454 LANC CONTROL

IC454 TL1596

1	UNREG
2	NC
3	C LIM
4	PWR CONT
5	NC
6	GND
7	VREF
8	EVER 5V
9	WAKEUP
10	DATA OUT
11	LANC SIG
12	DATA IN
13	NC
14	LANC DC

(D-17) IC451 SWITCHING REG

IC451 S-8420AF — D450 MA728 (E-18)

(BACKUP DC)

(EVER 5V)

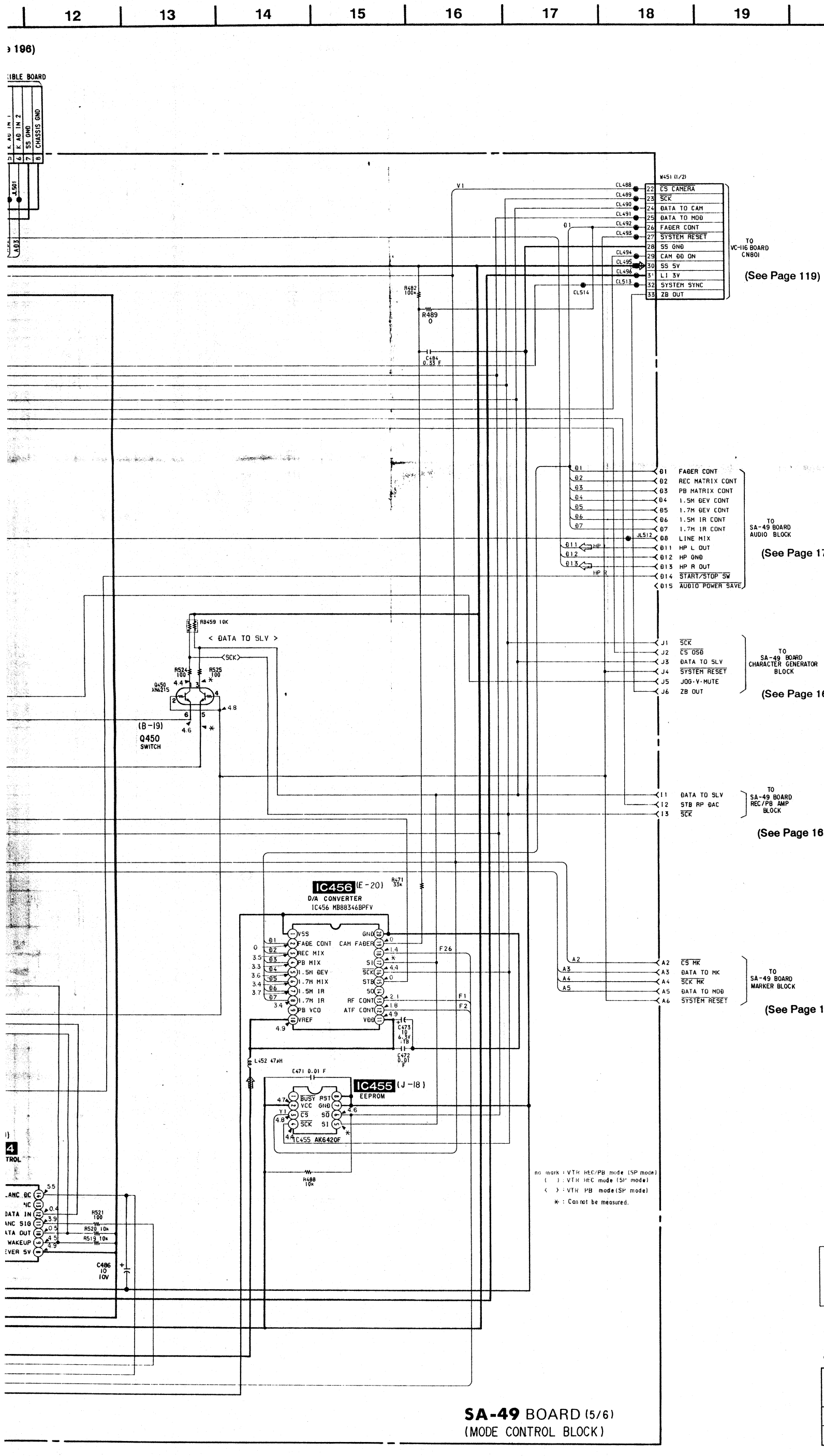
CN452 5P

CAM+STBY SW	5
VTR MODE SW	4
SS GND	3
LANC SIG	2
LANC DC	1

NO CONNECT

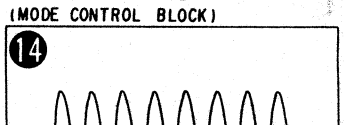
JL507

JL506



SA-49 BOARD
(MODE CONTROL BLOCK)

14



IC452 (4) REC/PB 4.6Vp-p(10MHz)

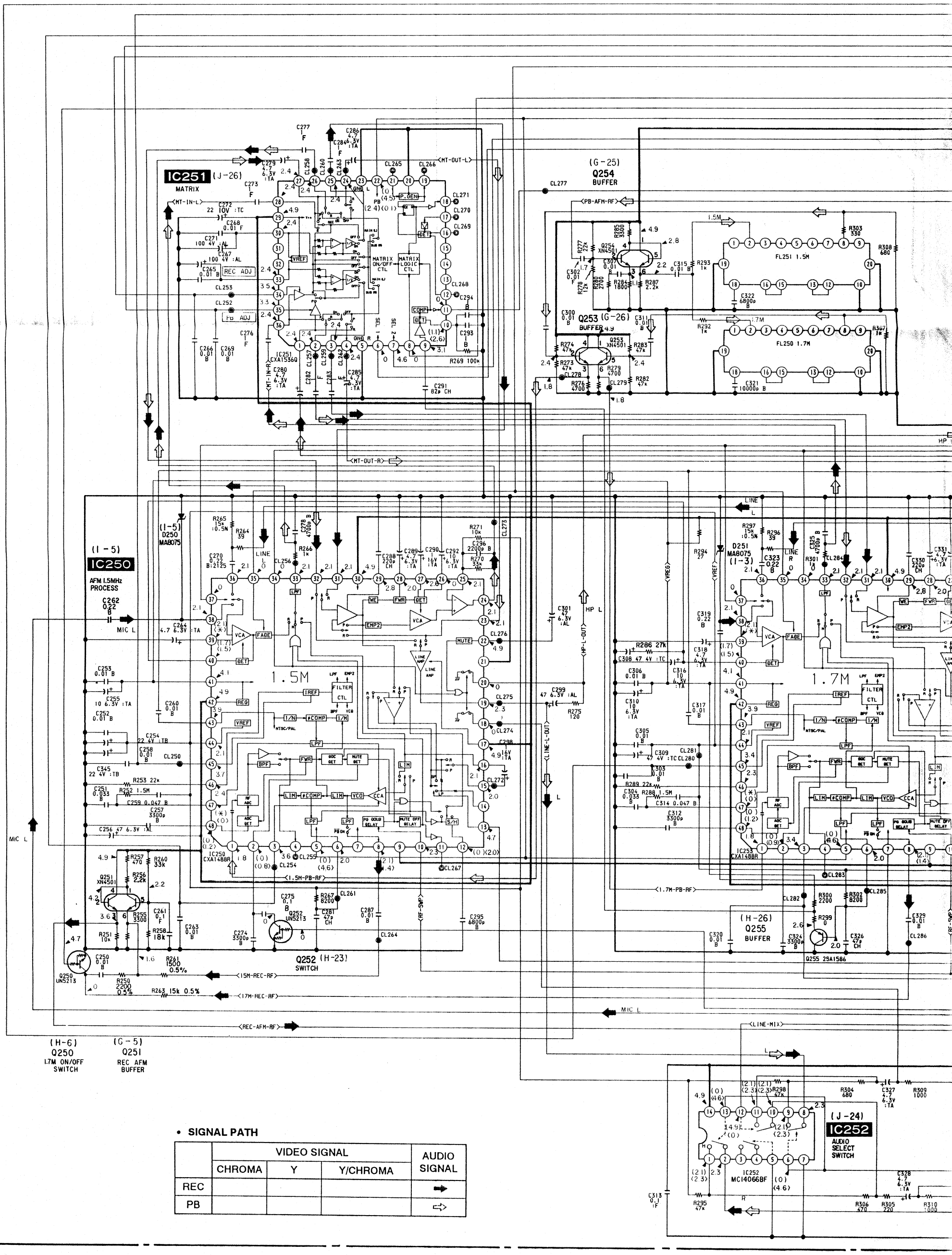
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				⇨

— Ref. No. SA-49 BOARD: 4000 series —

SA-49 BOARD (6/6)(AUDIO BLOCK)

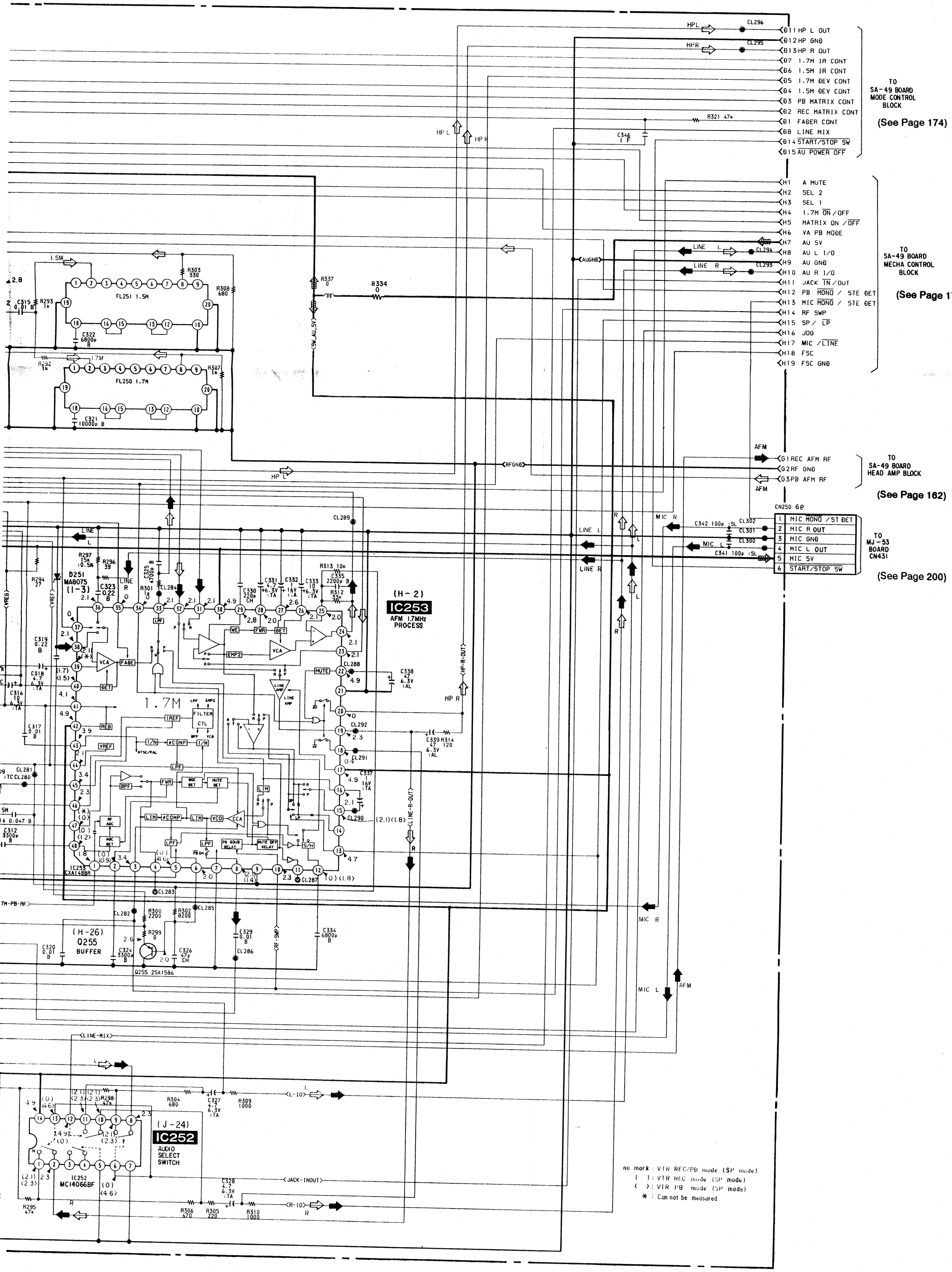


• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

09

9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20

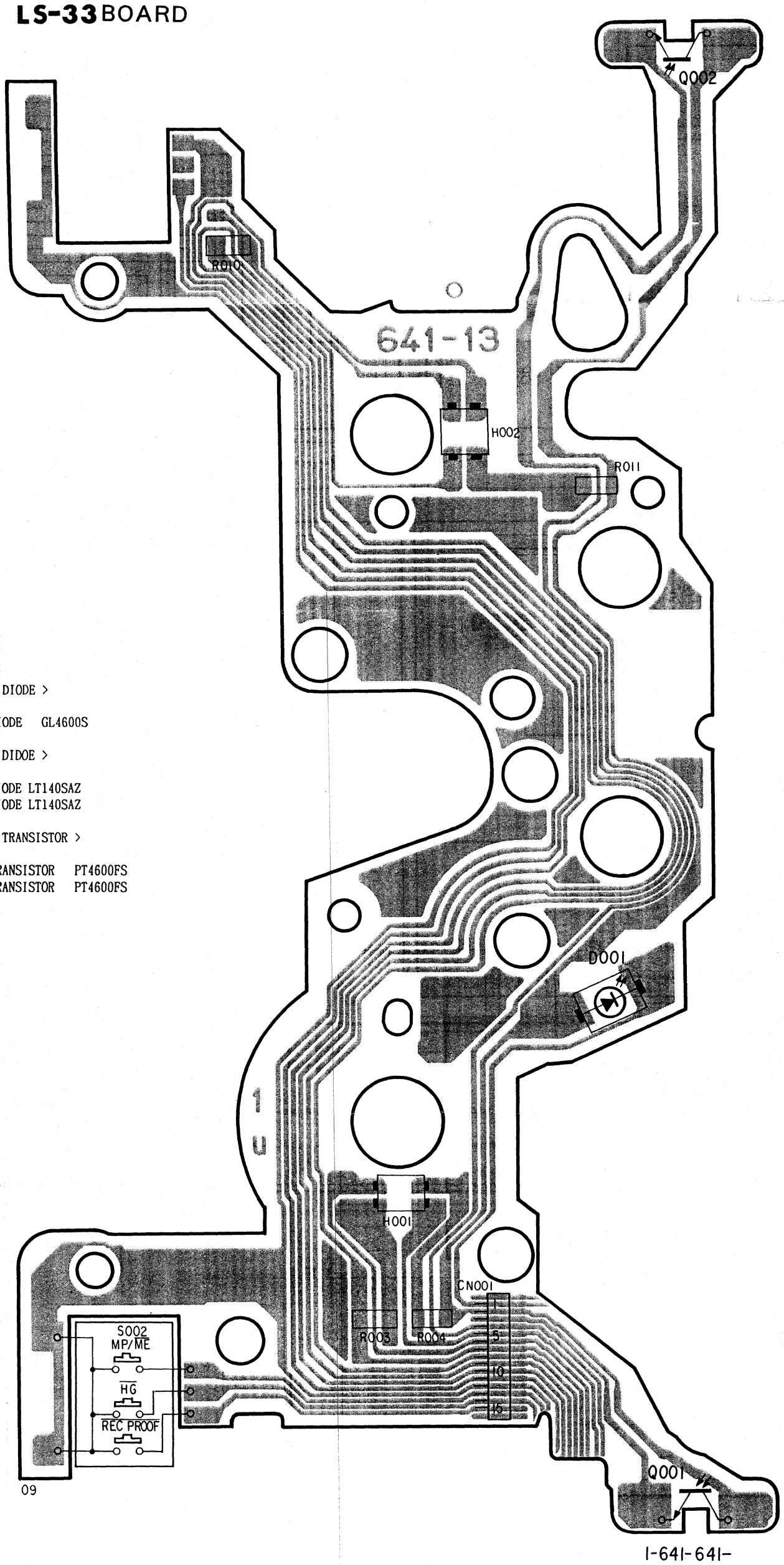


CC-74 (FG/PG WAVE SHAPING), LM-40 (LOADING MOTOR), LS-33 (MECHA SENSOR), FP-442 (MODE SWITCH) PRINTED WIRING BOARDS

— Ref. No. CC-74 BOARD: 5000 series, LS-33 BOARD: 8000 series —

- LM-40, FP-442 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

LS-33 BOARD



< DIODE >

D001 8-719-989-52 DIODE GL4600S

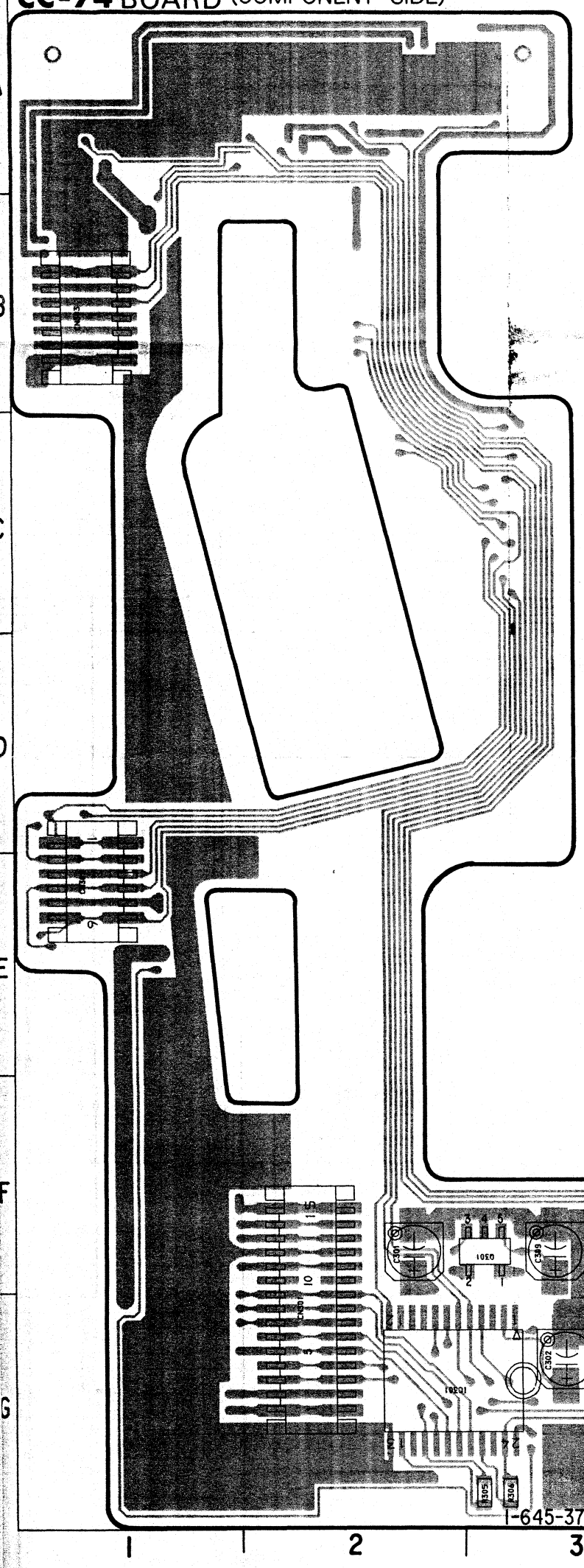
< DIDOE >

H001 8-719-987-62 DIODE LT140SAZ
H002 8-719-987-62 DIODE LT140SAZ

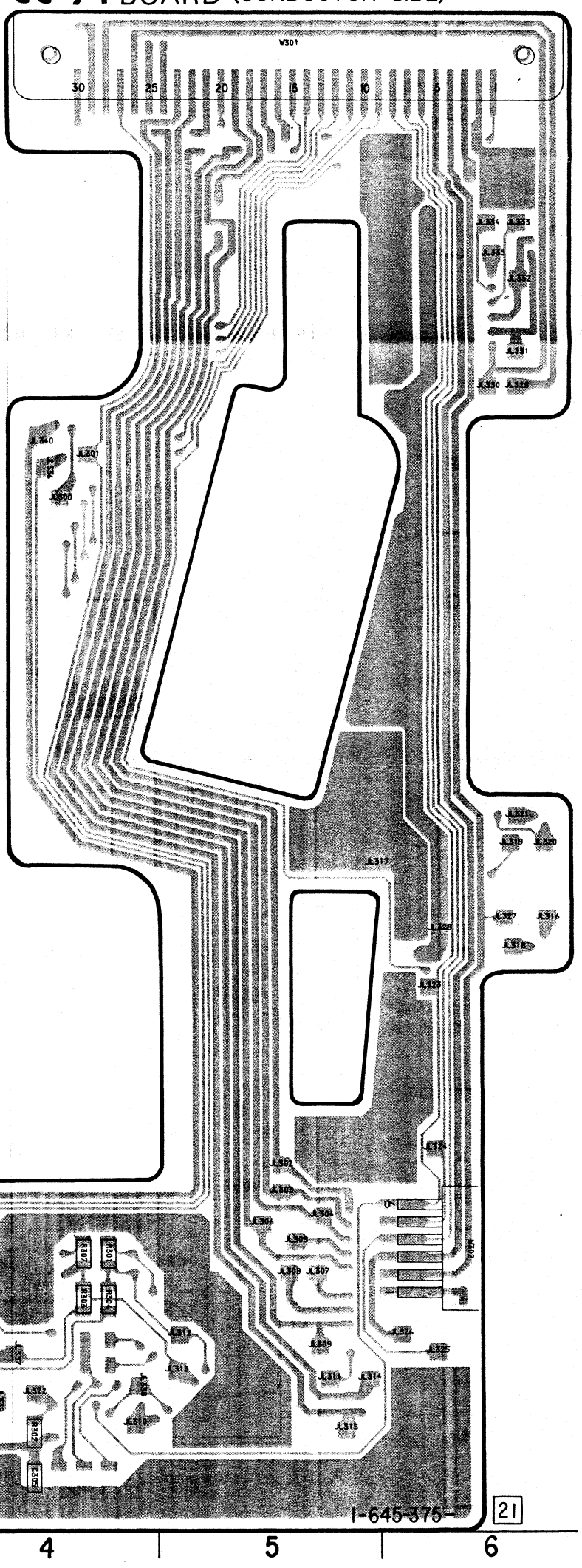
< TRANSISTOR >

Q001 8-729-012-46 TRANSISTOR PT4600FS
Q002 8-729-012-46 TRANSISTOR PT4600FS

CC-74 BOARD (COMPONENT SIDE)



CC-74 BOARD (CONDUCTOR SIDE)



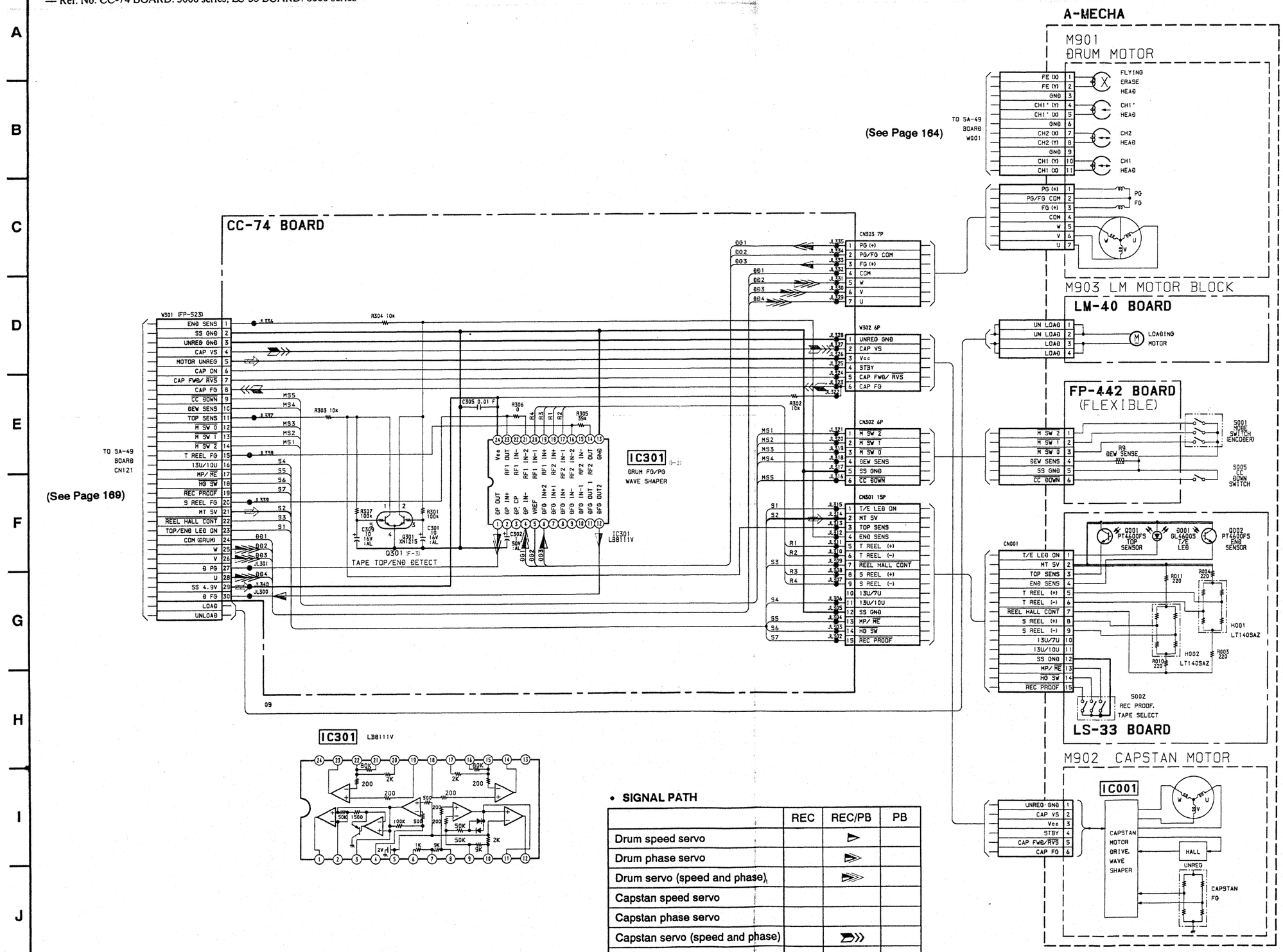
< IC >

IC301 8-759-059-09 IC LB8111V

< TRANSISTOR >

Q301 8-729-403-17 TRANSISTOR XN1215

— Ref. No. CC-74 BOARD: 5000 series, LS-33 BOARD: 8000 series —

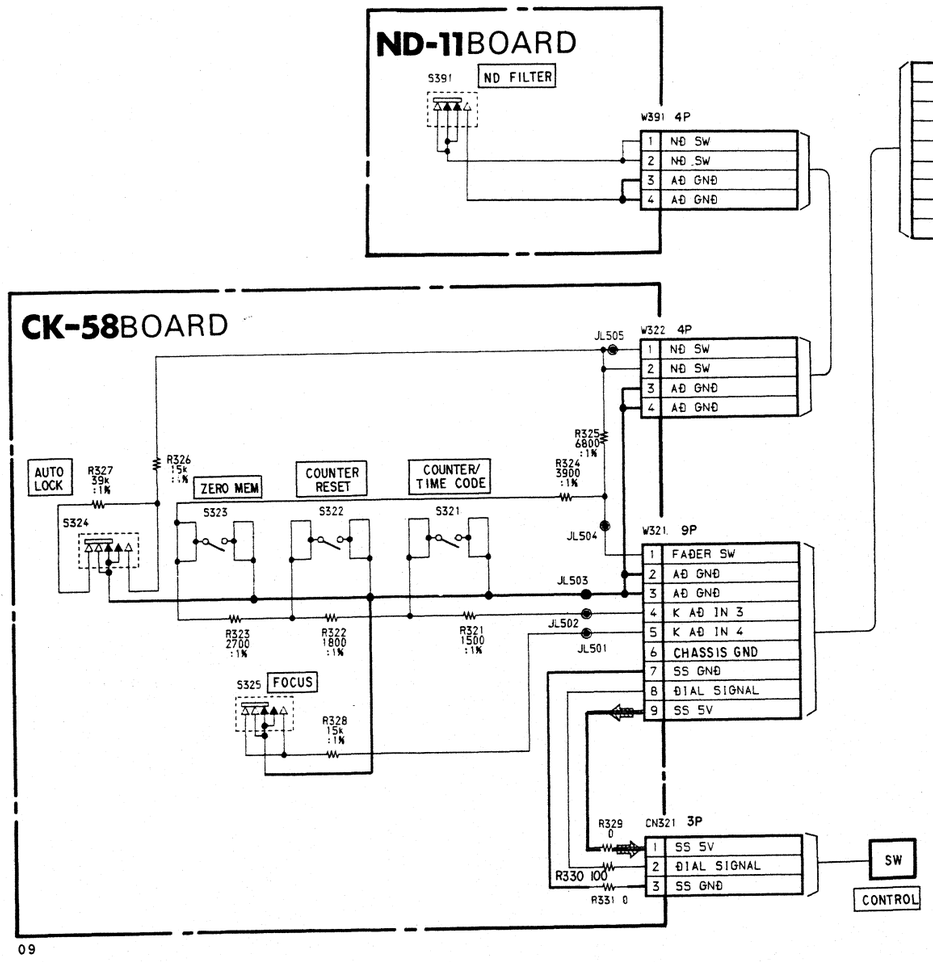


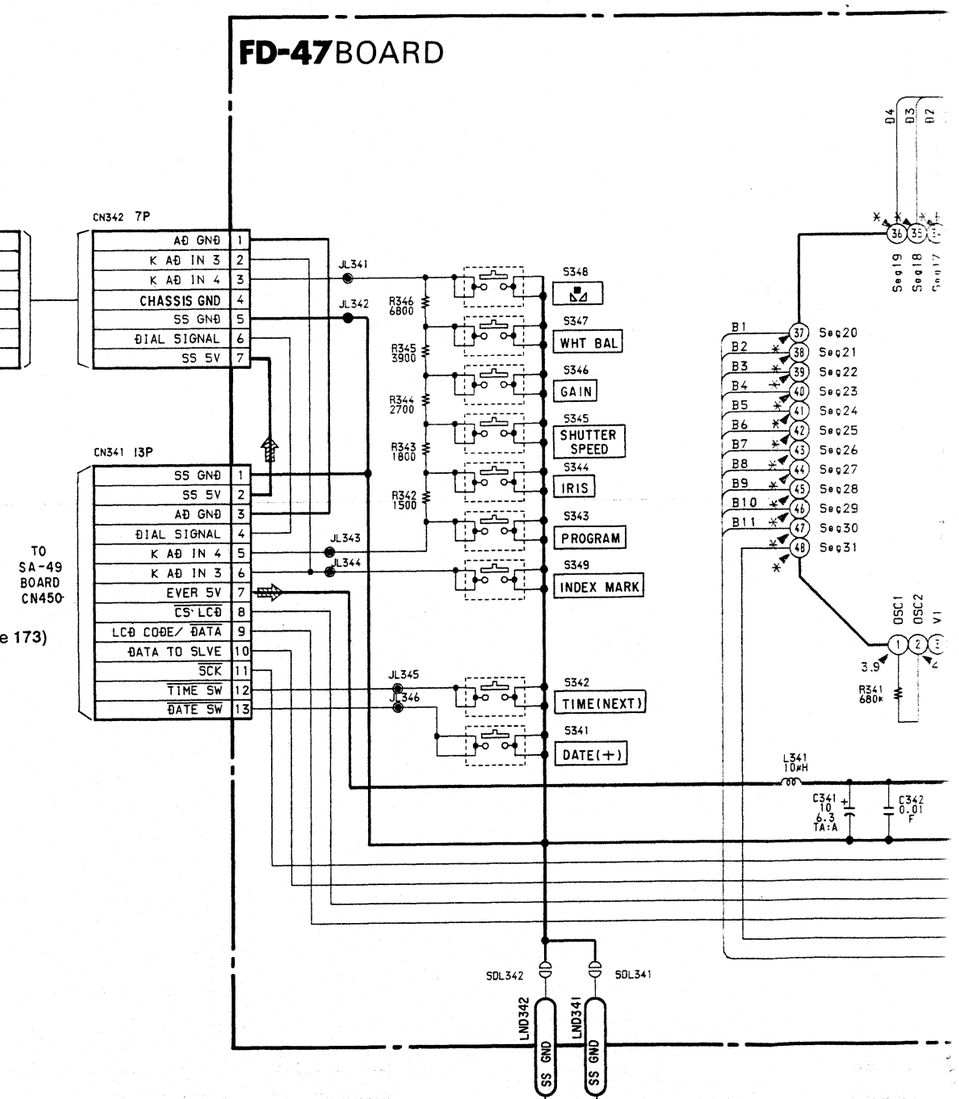
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo (speed and phase)		▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		▷	
Ref. signal			

CK-58 (CAMERA FUNCTION SWITCH), ND-11 (ND FILTER SWITCH), FD-47 (LCD CONTROL SWITCH), FP-534 (FADER SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. CK-58, ND-11, FD-47 BOARDS: 6000 series —





7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22

FP-534 FLEXIBLE BOARD

S005 FADER

FADER SW	1		
AD GND	2		
AD GND	3	1	AD GND
K AD IN 3	4	2	K AD IN 3
K AD IN 4	5	3	K AD IN 4
CHASSIS GND	6	4	CHASSIS GND
SS GND	7	5	SS GND
DIAL SIGNAL	8	6	DIAL SIGNAL
SS 5V	9	7	SS 5V

FD-47 BOARD

CN342 7P

AD GND	1
K AD IN 3	2
K AD IN 4	3
CHASSIS GND	4
SS GND	5
DIAL SIGNAL	6
SS 5V	7

CN341 13P

SS GND	1
SS 5V	2
AD GND	3
DIAL SIGNAL	4
K AD IN 4	5
K AD IN 3	6
EVER 5V	7
CS·LCD	8
LCD CODE/ DATA	9
DATA TO SLVE	10
SCK	11
TIME SW	12
DATE SW	13

JL341, JL342, JL343, JL344, JL345, JL346

R346 6800, R345 3900, R344 2700, R343 1800, R342 1500

S348, S347 WHT BAL, S346 GAIN, S345 SHUTTER SPEED, S344 IRIS, S343 PROGRAM, S349 INDEX MARK, S342 TIME(NEXT), S341 DATE(+)

TO SA-49 BOARD CN450

(See Page 173)

SW CONTROL

(B-2) **IC341** LCD CONTROL IC341 SE81510F0C

B1 37 Seg20, B2 38 Seg21, B3 39 Seg22, B4 40 Seg23, B5 41 Seg24, B6 42 Seg25, B7 43 Seg26, B8 44 Seg27, B9 45 Seg28, B10 46 Seg29, B11 47 Seg30, 48 Seg31

E4 36 Seg19, E3 35 Seg18, E2 34 Seg17, E1 33 Seg16, 32 Seg15, 31 Seg14, 30 Seg13, 29 Seg12, 28 Seg11, 27 Seg10, 26 Seg9, 25 Seg8

OSC1 1, OSC2 2, V1 3, V2 4, V3 5, Vss 6, Vdd 7, CK 8, SI 9, CS 10, C/D 11, COM0 12

3.9, 4.1, 5.0, 4.6, 4.7, 4.1, 1.8

R341 680k, R351 0, L341 10μH, C341 10 6.3 TA:A, C342 0.01 F

A4 24 Seg7, A3 23 Seg6, A2 22 Seg5, 21 Seg4, 20 Seg3, 19 Seg2, 18 Seg1, 17 Seg0, 16 VREG, 15 COM3, 14 COM2, 13 COM1

A1 A2 A3 A4, C1 C2 C3 C4, D1 D2 D3 D4, B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11, E4 E3 E2 E1

W341 40P

40	COM0
39	COM1
38	COM2
37	COM3
36	Seg3
35	Seg4
34	Seg5
33	Seg6
32	Seg7
31	Seg8
30	Seg9
29	Seg10
28	Seg11
27	Seg0
26	Seg16
25	Seg17
24	Seg18
23	Seg19
22	Seg1
21	Seg2
20	Seg20
19	Seg21
18	Seg22
17	Seg23
16	Seg24
15	Seg25
14	Seg26
13	Seg27
12	Seg28
11	Seg29
10	Seg30
9	Seg0
8	Seg26
7	Seg19
6	Seg31
5	Seg15
4	Seg14
3	Seg13
2	Seg12
1	Seg31

LIQUID CRYSTAL DISPLAY

SOL342, SOL341

LND342 SS GND, LND341 SS GND

no mark: CAMERA E-E mode

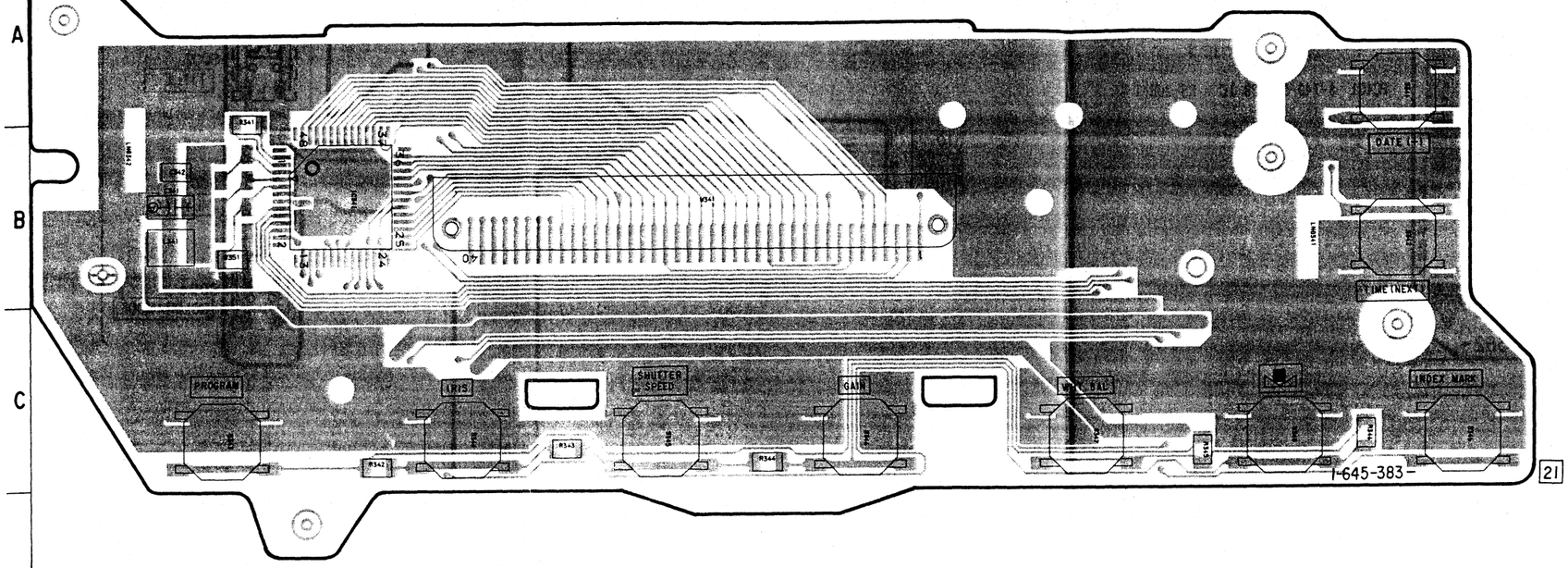
* : Can not be measured

— Ref. No. CK-58, ND-11, FD-47 BOARDS: 6000 series —

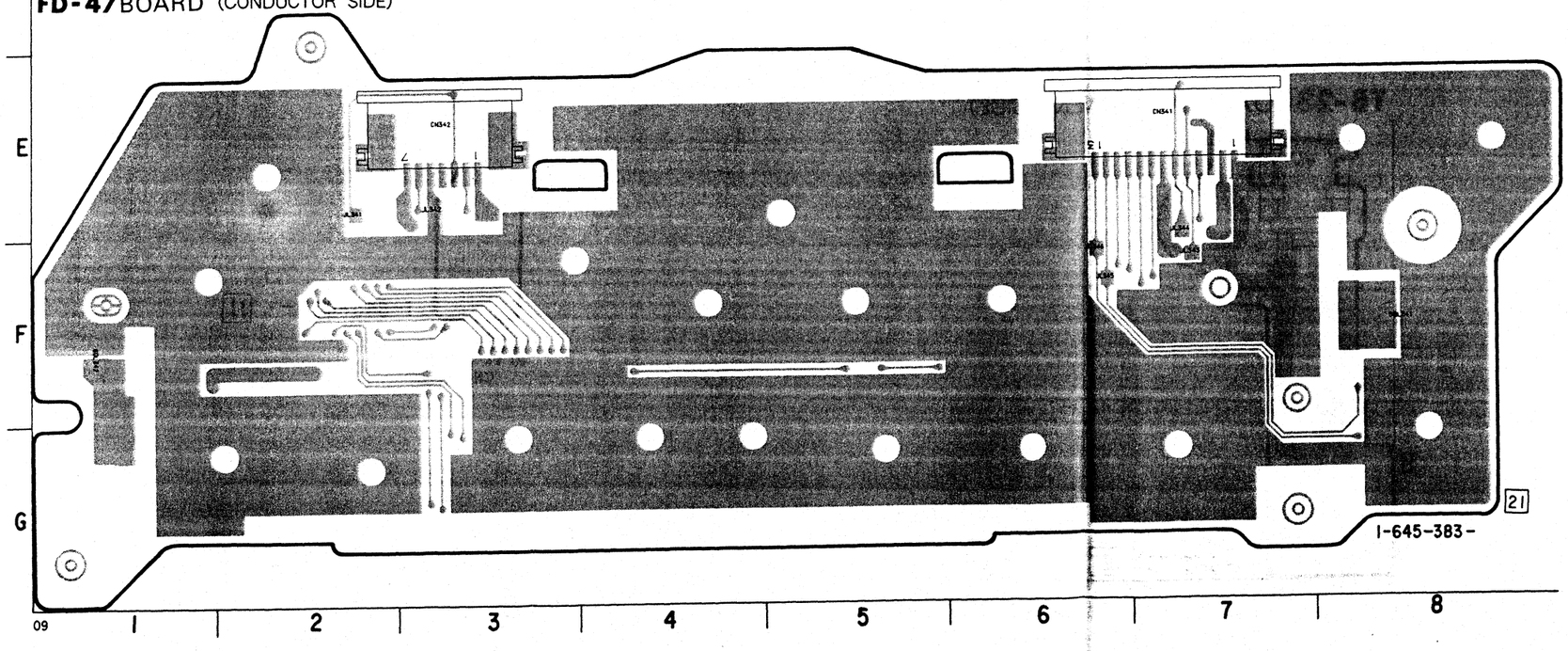
< IC >

IC341 8-759-073-95 IC SED1510F0C

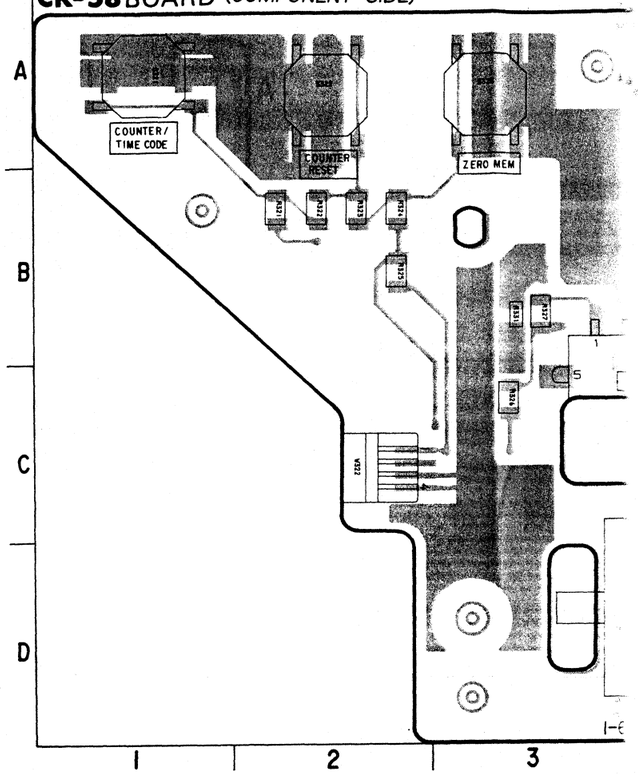
FD-47 BOARD (COMPONENT SIDE)



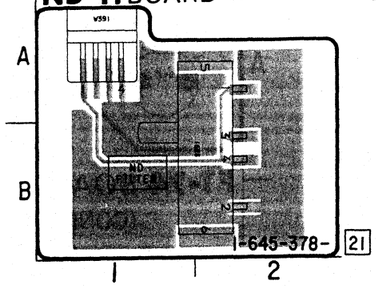
FD-47 BOARD (CONDUCTOR SIDE)



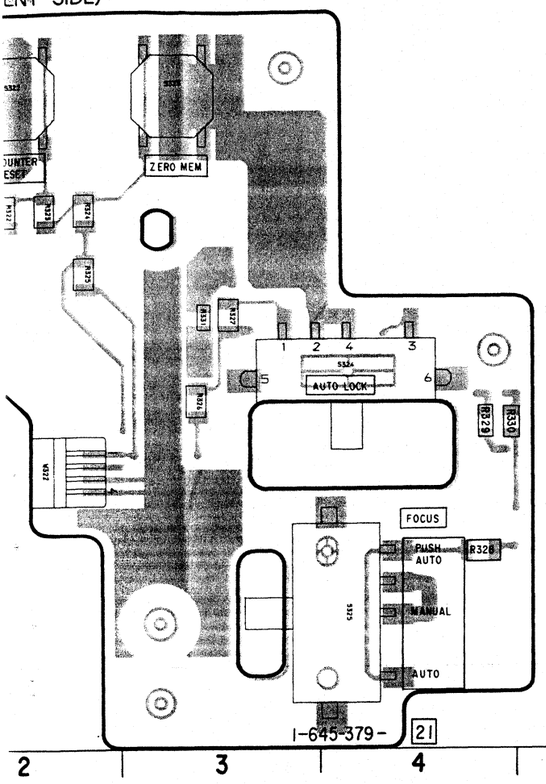
CK-58 BOARD (COMPONENT SIDE)



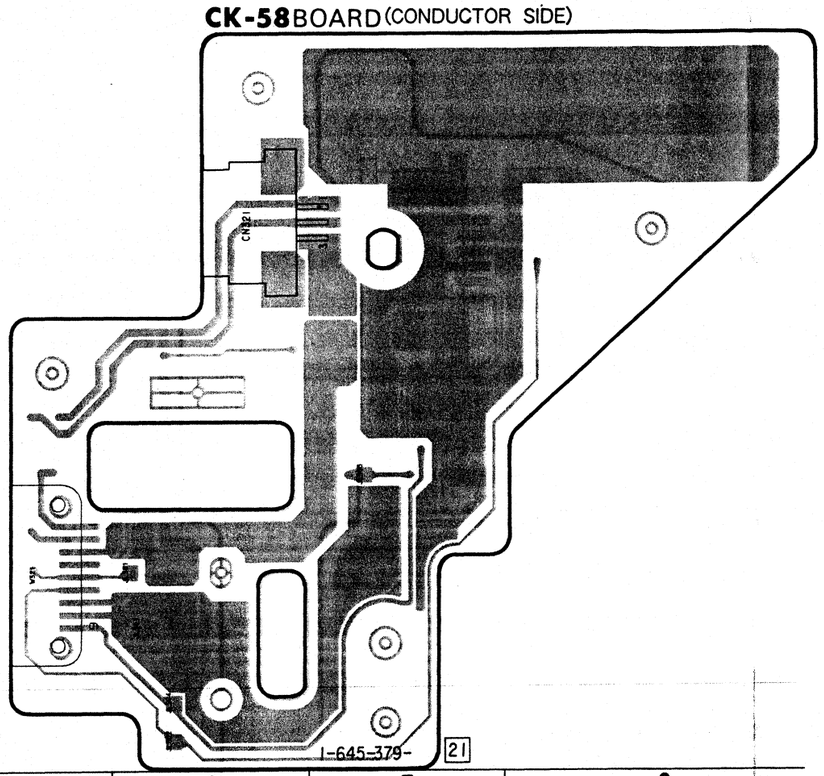
ND-11 BOARD (COMPONENT SIDE)



ENT SIDE)



CK-58 BOARD (CONDUCTOR SIDE)

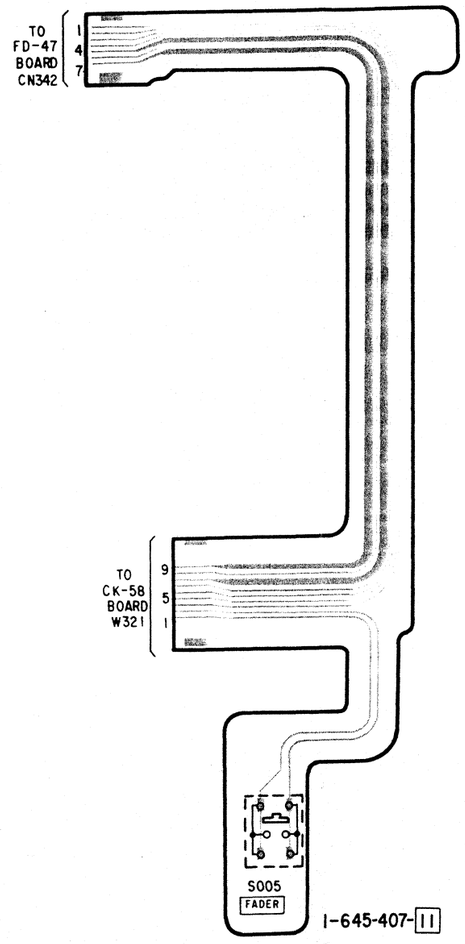


2 3 4 5 6 7 8

ENT SIDE)

-21

FP-534 FLEXIBLE BOARD



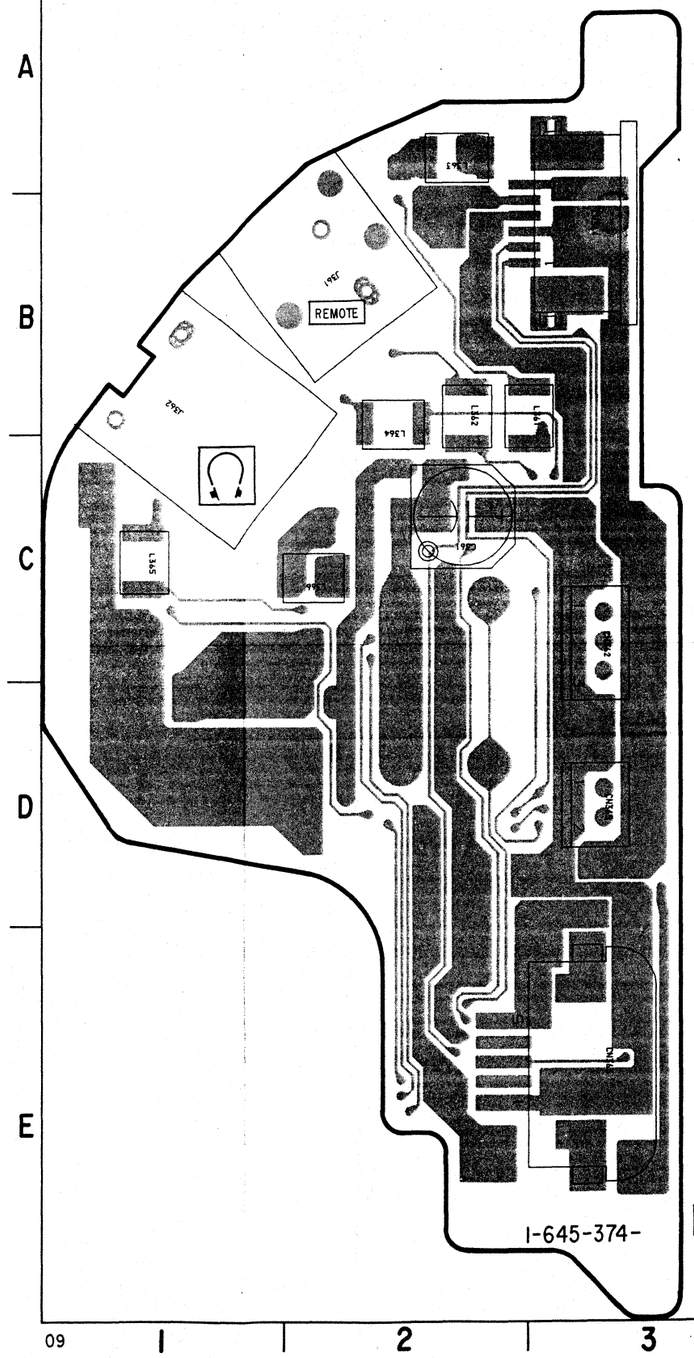
SW-203 (CAMERA START/STOP SWITCH), FT-74 (TALLY LED), RM-63 (REMOTE CONTROL RECEIVER), TB-23 (TALLY LED), VK-26 (FUNCTION SWITCH), FP-533 (FUN

— Ref. No. SW-203, FT-74, RM-63, TB-23 BOARDS: 6000 series —

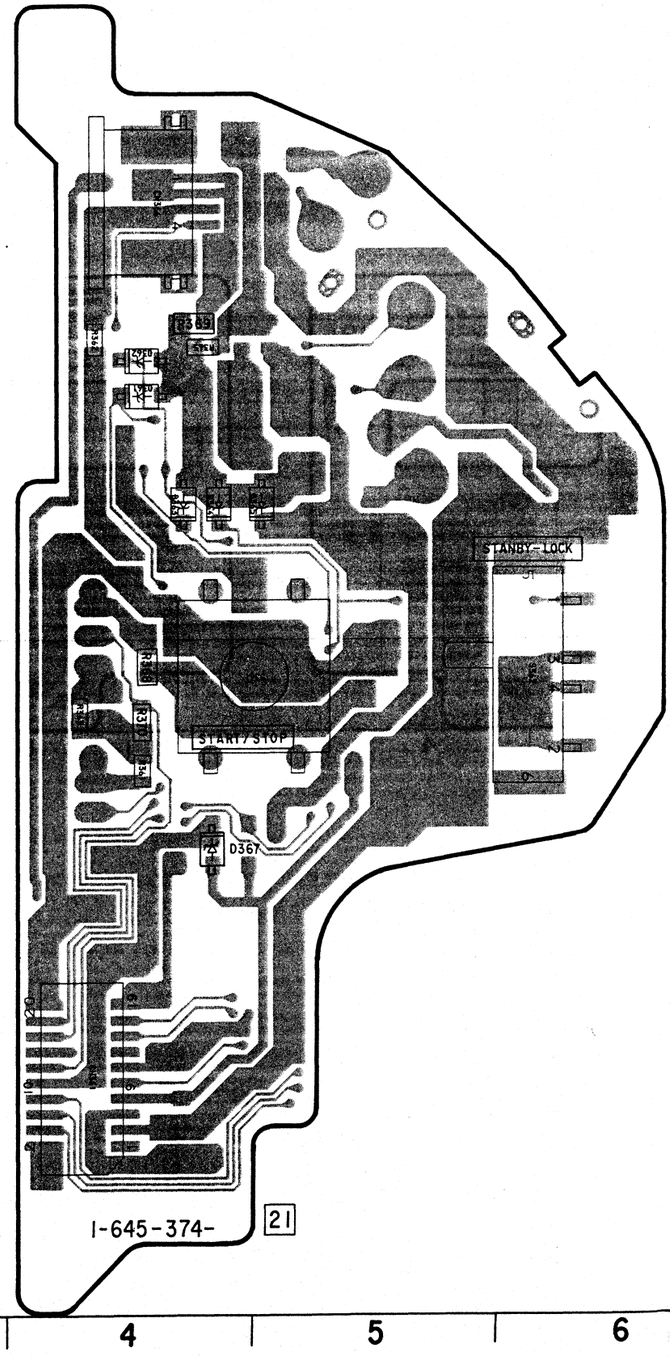
< DIODE >

D361	8-719-027-65	DIODE	MA8075-10
D362	8-719-027-65	DIODE	MA8075-10
D363	8-719-027-65	DIODE	MA8075-10
D364	8-719-027-65	DIODE	MA8075-10
D365	8-719-027-65	DIODE	MA8075-10
D367	8-719-027-65	DIODE	MA8075-10

SW-203 BOARD (COMPONENT SIDE)



SW-203 BOARD (CONDUCTOR SIDE)



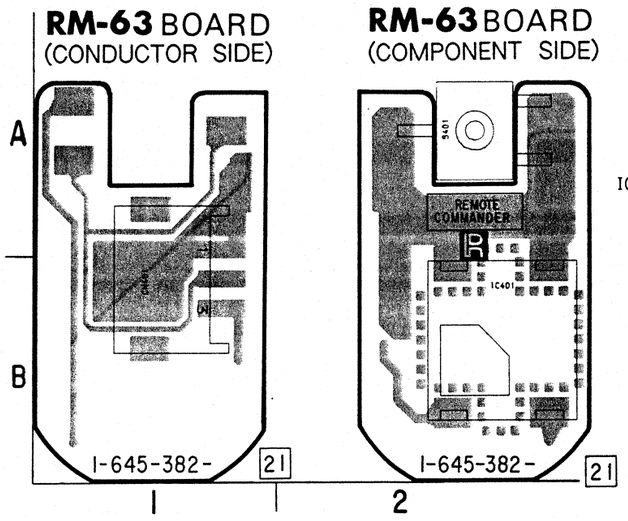
A B C D E

09 1 2 3 4 5 6

• VK-26 board is replaced as a block, so that PRINTED WIRING BOARD is omitted.

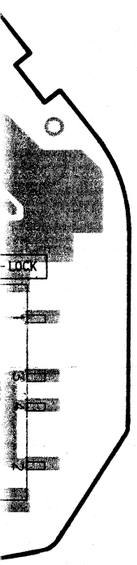
RM-63 BOARD (CONDUCTOR SIDE)

RM-63 BOARD (COMPONENT SIDE)



< IC >

IC401 8-749-923-29 IC RS-20E-T

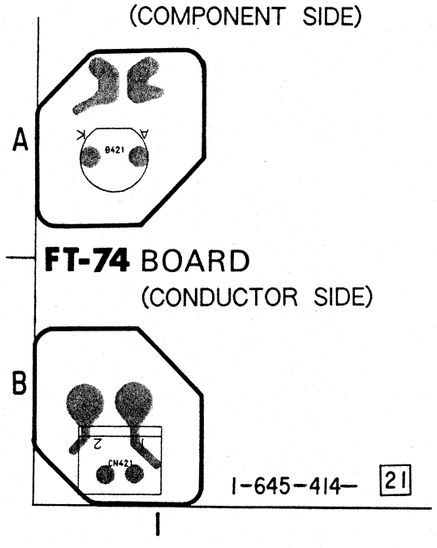


< DIODE >

D421 8-719-027-79 DIODE BR3368S

FT-74 BOARD (COMPONENT SIDE)

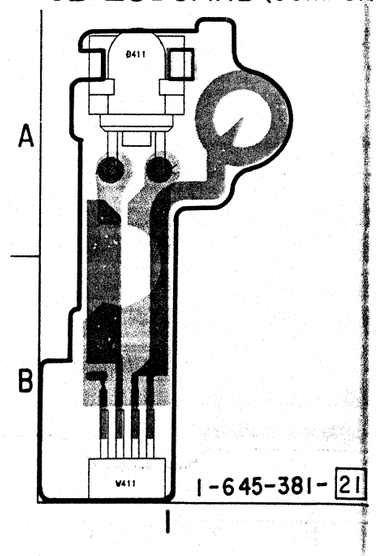
FT-74 BOARD (CONDUCTOR SIDE)



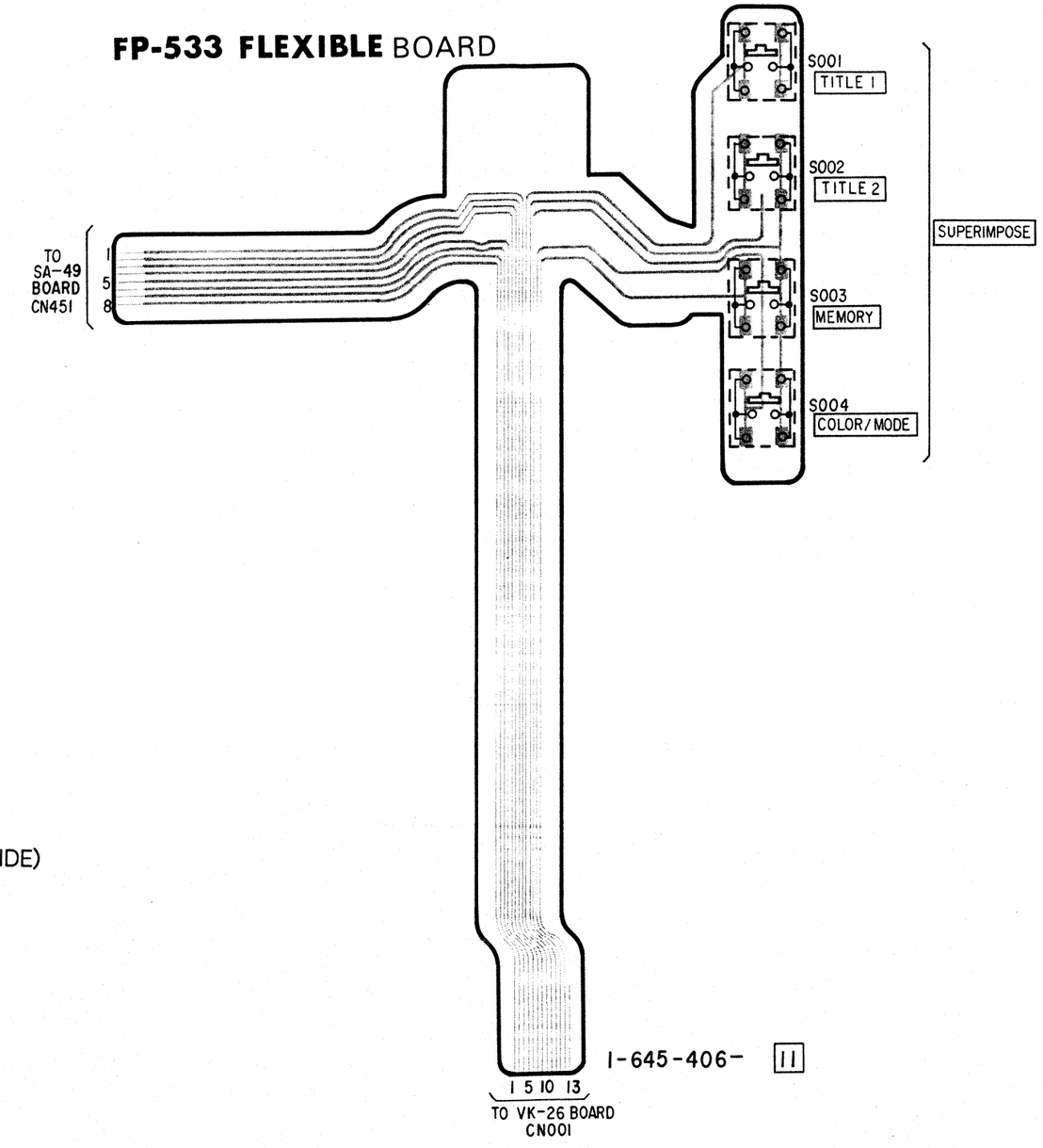
< DIODE >

D411 8-719-812-41 LED TLR124

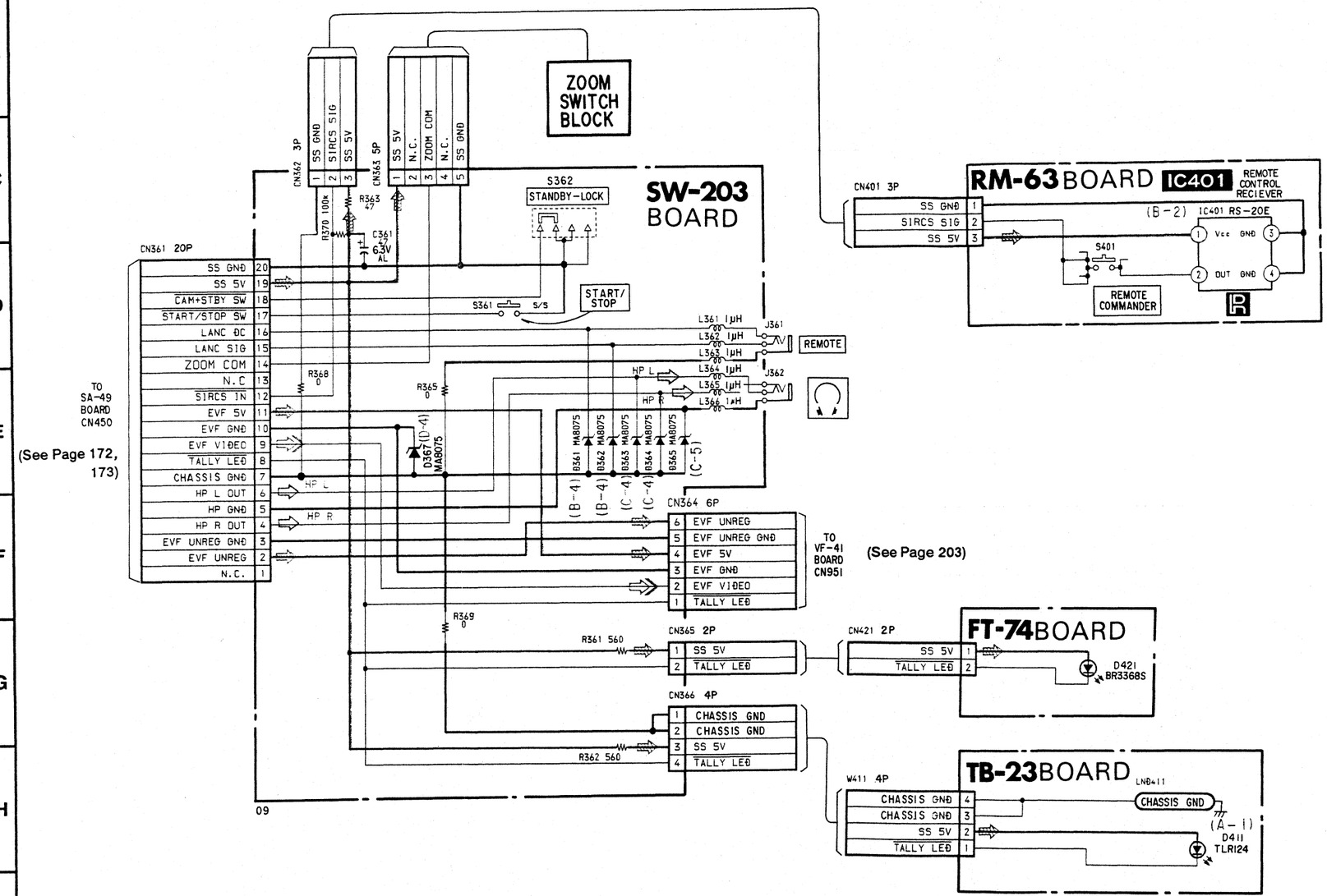
TB-23 BOARD (COMPONENT SIDE)

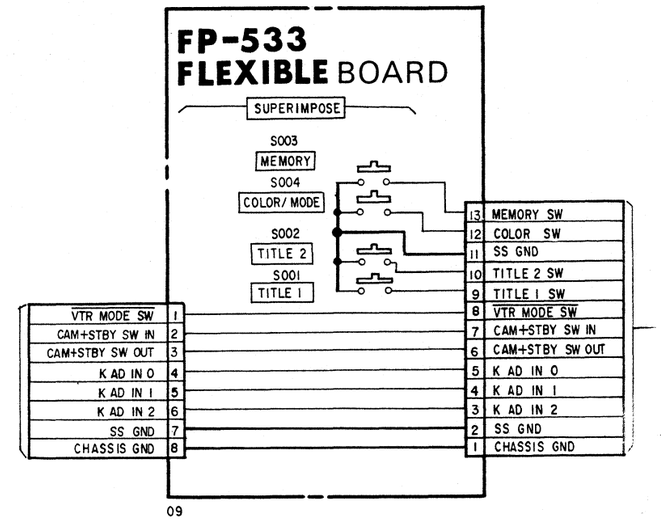


FP-533 FLEXIBLE BOARD



— Ref. No. SW-203, FT-74, RM-63, TB-23 BOARDS: 6000 series —

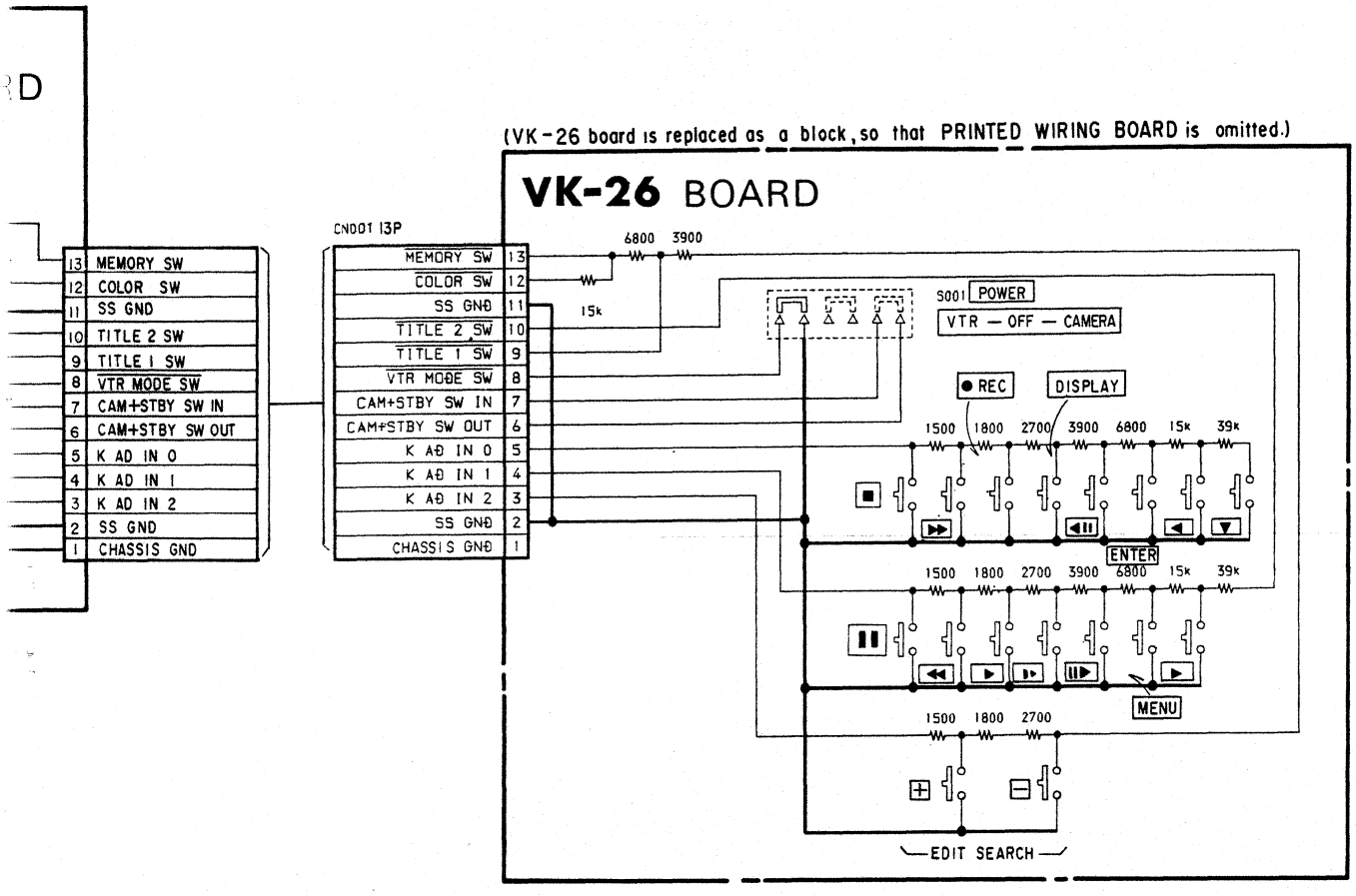




• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		⇨

16 | 17 | 18 | 19 | 20 | 21 | 22 | 23



MJ-53 (MIC AMP) PRINTED WIRING BOARD

— Ref. No. MJ-53 BOARD: 5000 series —

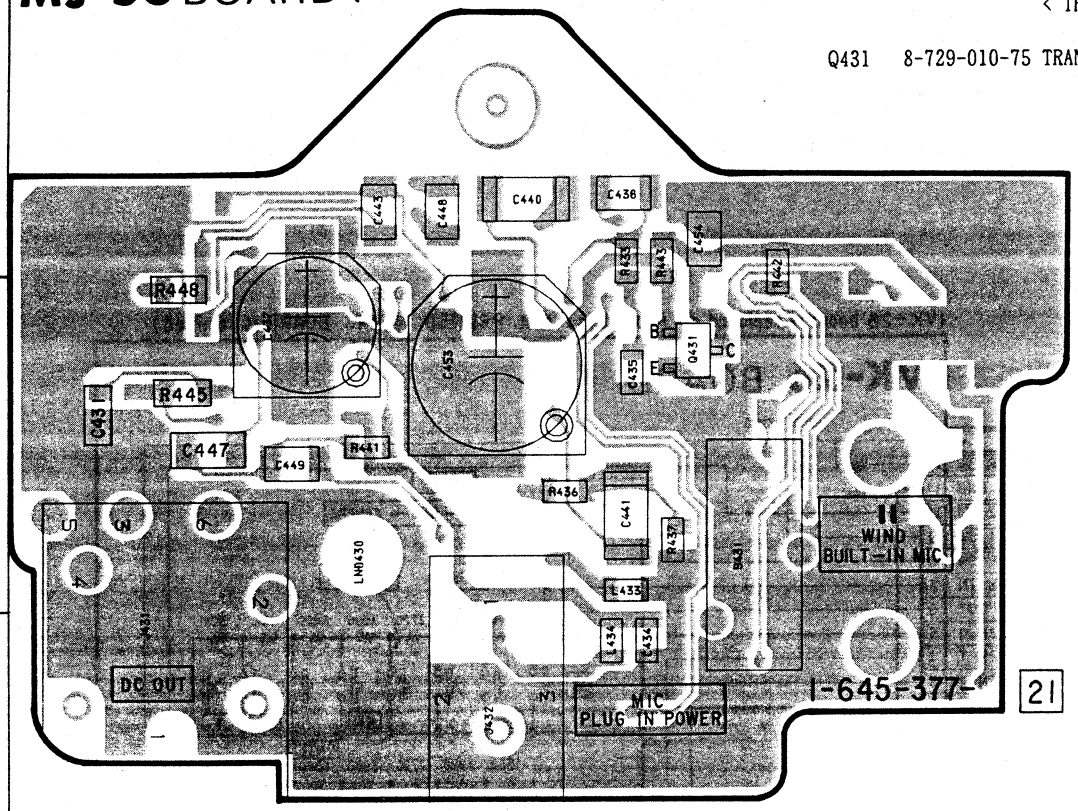
< IC >

IC431 8-759-823-41 IC LA7470M

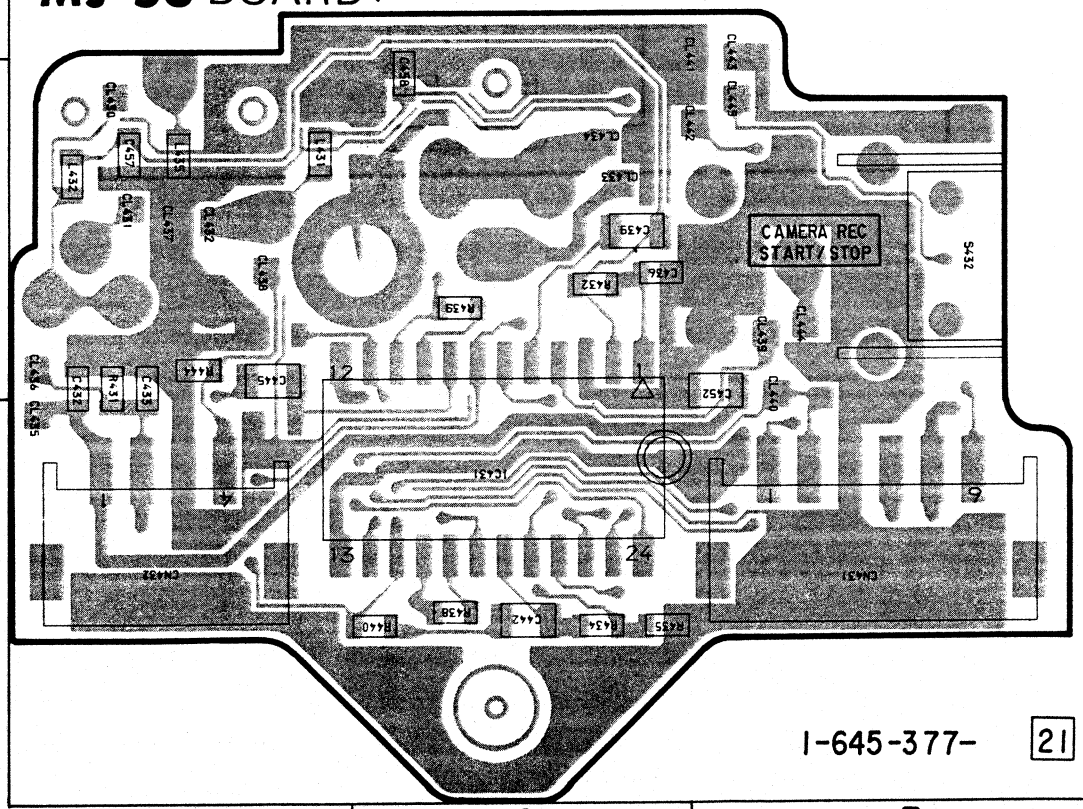
< TRANSISTOR >

Q431 8-729-010-75 TRANSISTOR MSC4116-BC

MJ-53 BOARD (COMPONENT SIDE)

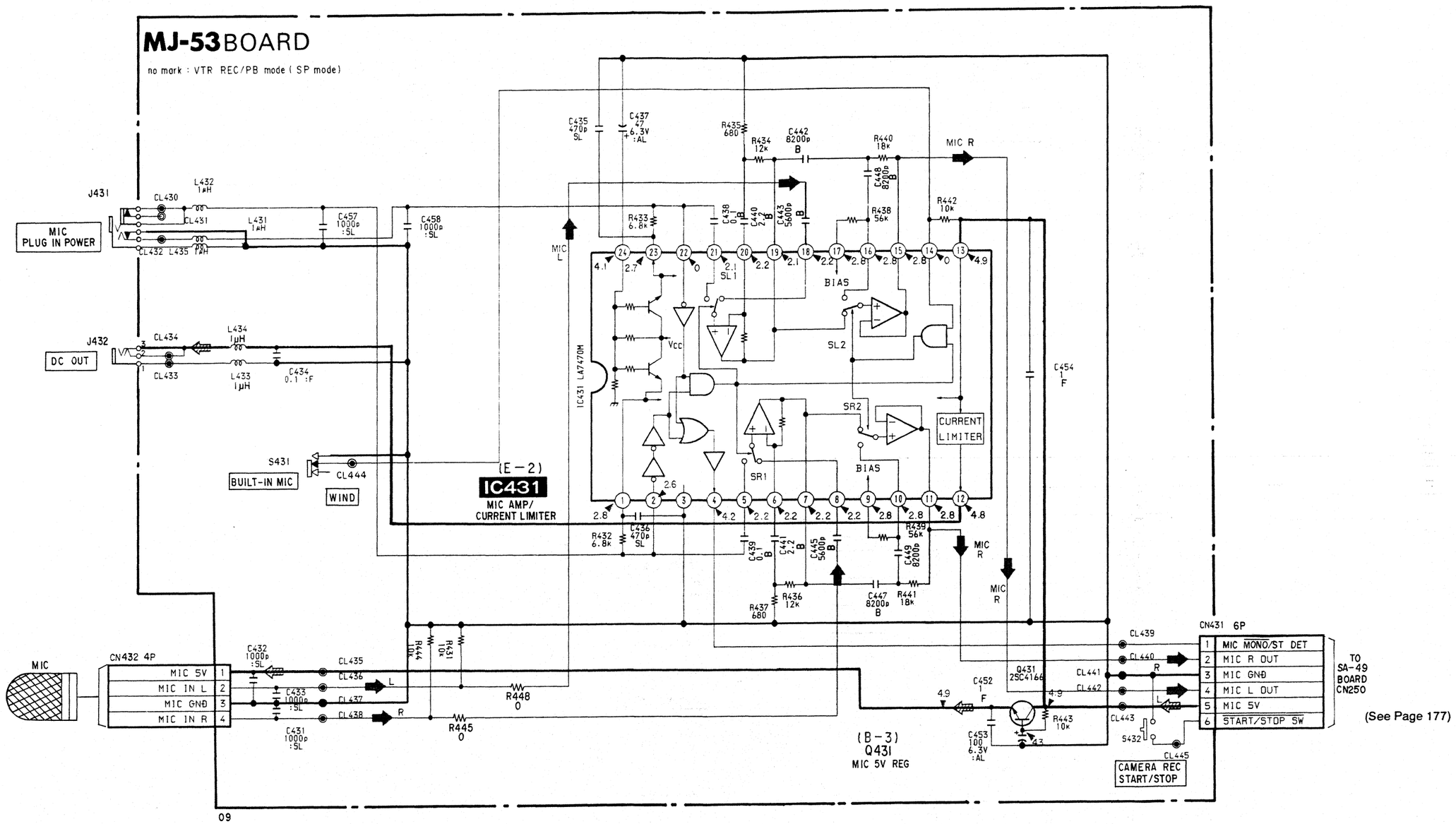


MJ-53 BOARD (CONDUCTOR SIDE)



MJ-53 (MIC AMP) SCHEMATIC DIAGRAM

— Ref. No. MJ-53 BOARD: 5000 series —



(See Page 177)

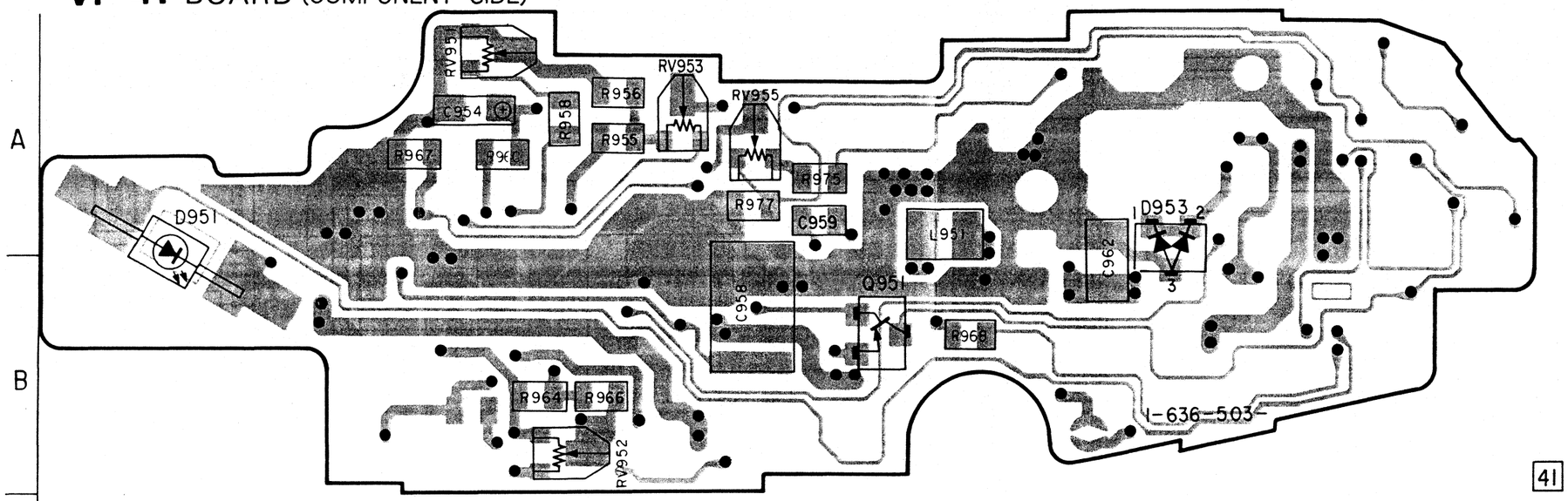
• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				

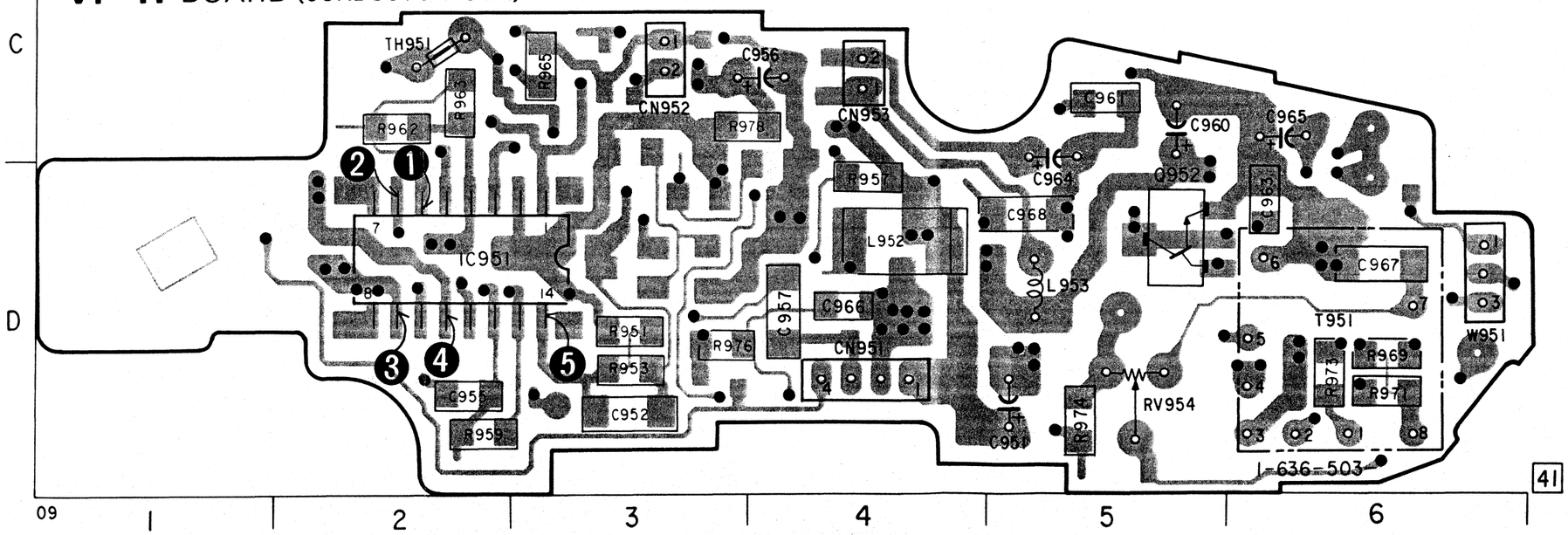
VF-41 (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-41 BOARD: 7000 series —

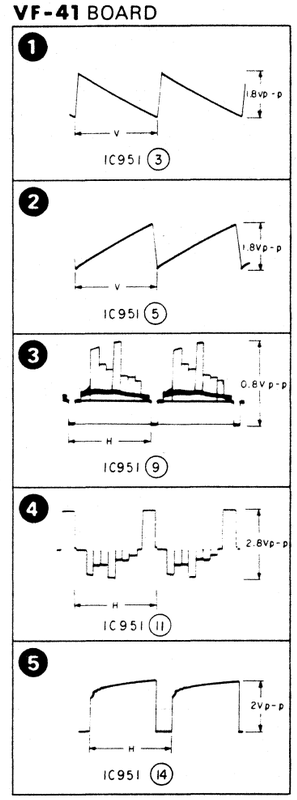
VF-41 BOARD (COMPONENT SIDE)



VF-41 BOARD (CONDUCTOR SIDE)



VF-41 BOARD



< DIODE >

D951	8-719-820-65	DIODE	TLS221
D953	8-719-400-20	DIODE	MA152WA

< IC >

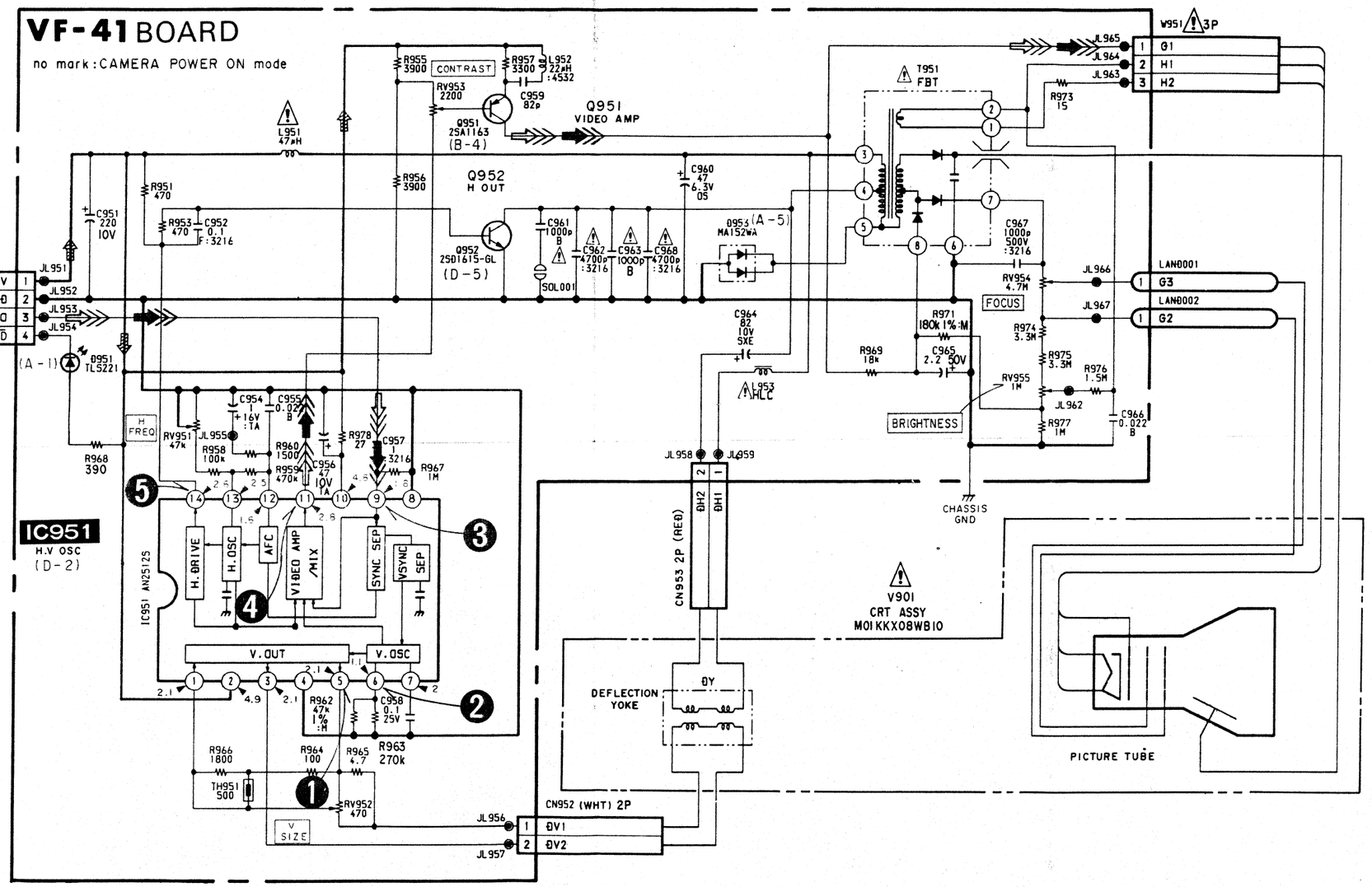
IC951	8-759-420-01	IC	AN2512S

< TRANSISTOR >

Q951	8-729-216-31	TRANSISTOR	2SA1163-G
Q952	8-729-106-68	TRANSISTOR	2SD1615A-GP

VF-41 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-41 BOARD: 7000 series —



Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

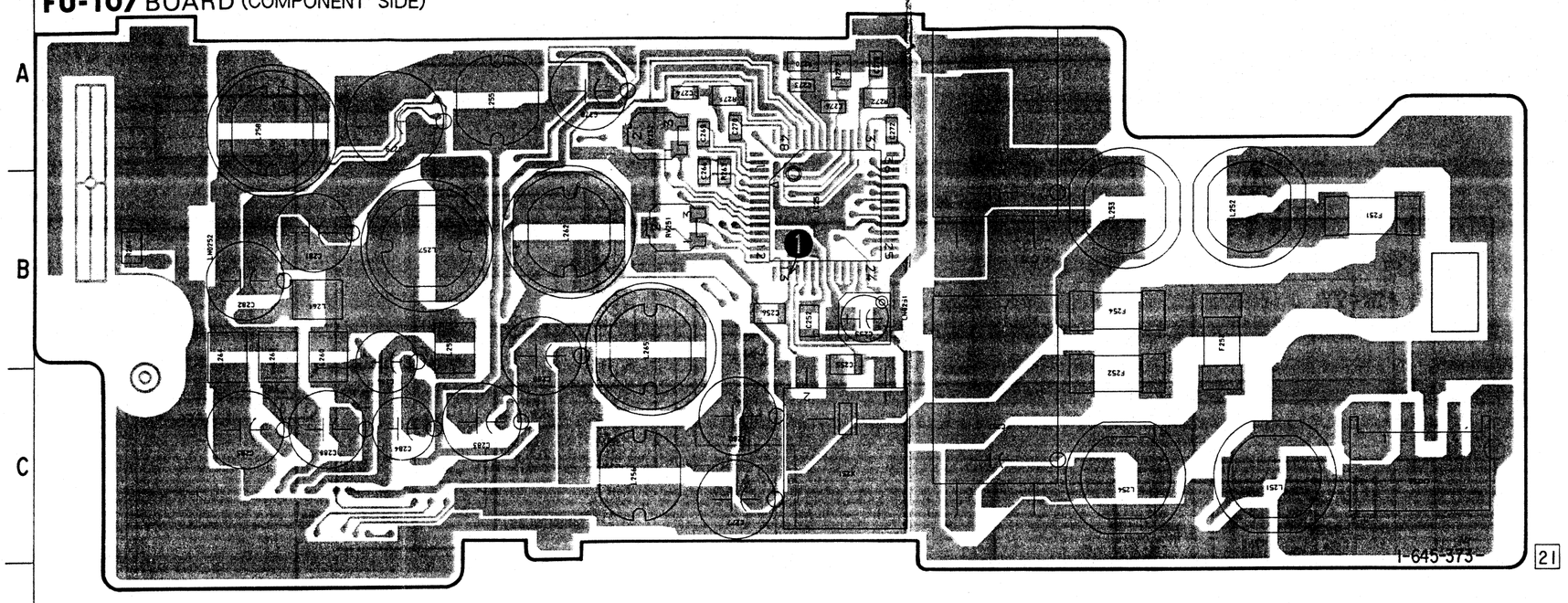
• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	
PB			⇨	

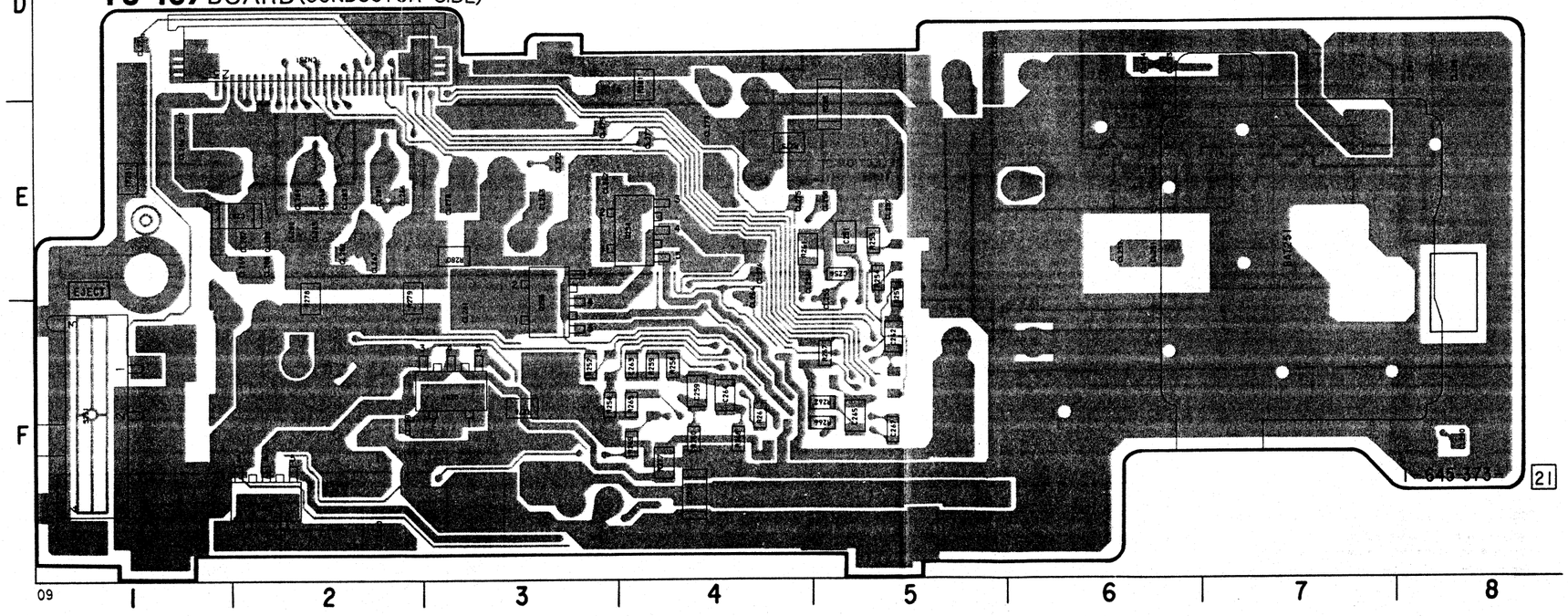
FU-107 (POWER, MECHA DRIVE) PRINTED WIRING BOARD

— Ref. No. FU-107 BOARD: 8000 series —

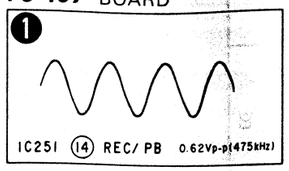
FU-107 BOARD (COMPONENT SIDE)



FU-107 BOARD (CONDUCTOR SIDE)



FU-107 BOARD



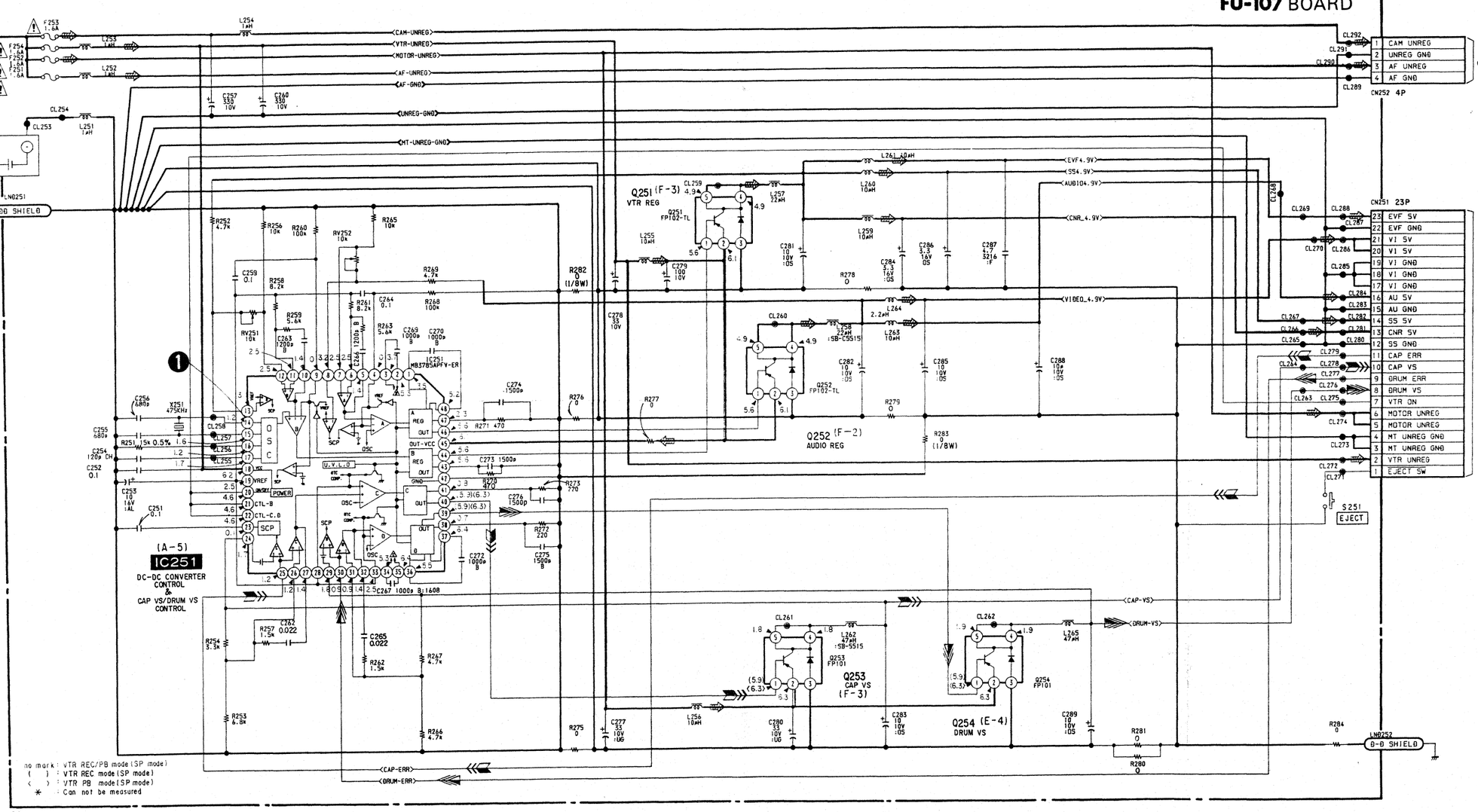
< IC >

IC251 8-759-060-94 IC MB3785APFV-G-BND-ER

< TRANSISTOR >

Q251 8-729-823-84 TRANSISTOR FP102
Q252 8-729-823-84 TRANSISTOR FP102
Q253 8-729-823-82 TRANSISTOR FP101
Q254 8-729-823-82 TRANSISTOR FP101

— Ref. No. FU-107 BOARD: 8000 series —


FU-107 BOARD
TO DC-DC CONVERTER
(See Page 117)
TO SA-49 BOARD W451
(See Page 169)
CN252 4P
CN251 23P
BAT251 BATTERY TERMINAL
GND SHIELD
IC251 DC-DC CONVERTER CONTROL & CAP VS/DRUM VS CONTROL
Q251 (F-3) VTR REG
Q252 (F-2) AUDIO REG
Q253 CAP VS (F-3)
Q254 (E-4) DRUM VS
S251 EJECT
B-D SHIELD
no mark : VTR REC/PB mode (SP mode)
( ) : VTR REC mode (SP mode)
< > : VTR PB mode (SP mode)
* : Can not be measured

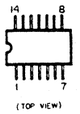
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

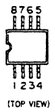
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⋙	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⋙	
Ref. signal			

4-3. SEMICONDUCTORS

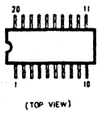
AN2512S
CXA1443N
CXL5505M
LM324PW
MC14066BF
MC74AC00M
MC74AC74ML
NJM3403AV
TC4066BFS
TC74HC4066AFS



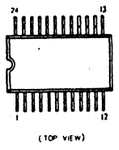
BA7046F
BR9021AF
BR9041ARF
CXA1211M
CXL5504M
NJM2234M
NJM2235M
NJM3416U
TA75S393F
TA75W393FU
TC4W53FU



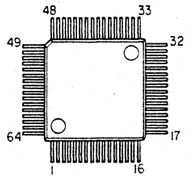
CX20102
CXA1270N
CXD2104BM
M52679VP
M62352GP
MB88346BPFV
MB88362PFV
MPC1720M
TL1596CDB
μPD6453GT-621
XRU5846FS



CXA1203N
LA7470M
LB8111V
M52678FP



CXA1207AR
LV4101W



CXA1208R
CXA1234AR
CXA1339R
CXA1481AR
CXA1488R
CXA1509AR
CXA1592R
CXD2111R
CXD2120R
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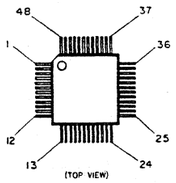

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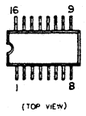

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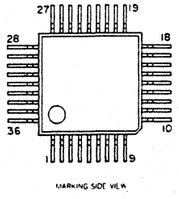

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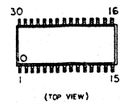

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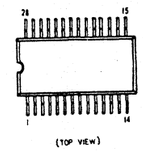

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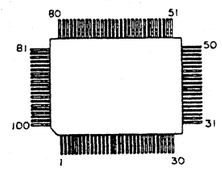

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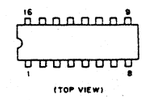

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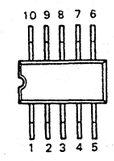

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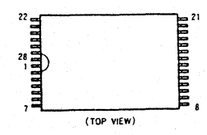

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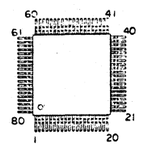

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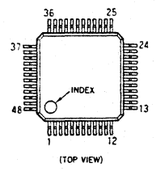

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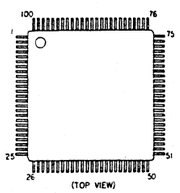

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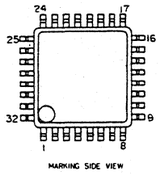

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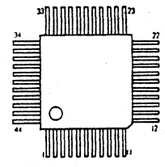

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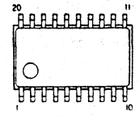
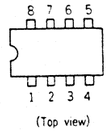


S-8420AF



TC7S04FU
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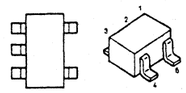

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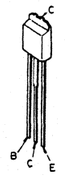
2SB624-BV345
2SC1623-L7
2SC3931-D
2SC4177-L5
2SC4178-FB
2SC4213-B
RN2301
UN4213
UN5113
UN5115
UN511L
UN5211
UN5212
UN5213
UN5216QRS

2SB1115A-YQ
2SD1615A-GP

2SB1202FAST



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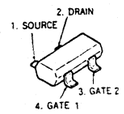
2SK711-BL

3SK248



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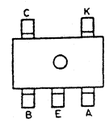
FP102



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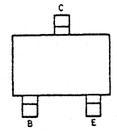
MSC4116-B/C



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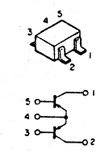

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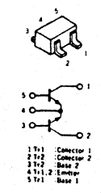
XN1501



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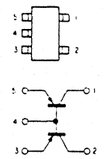

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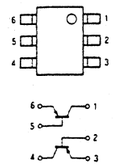

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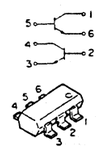

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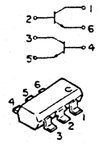

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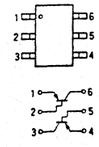

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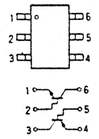

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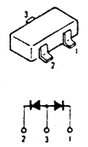
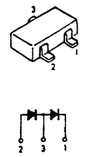
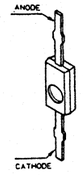


1SS226



1T32



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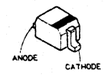

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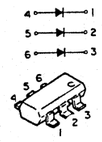
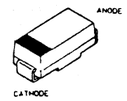
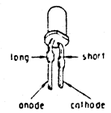


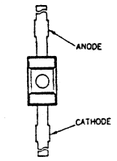
MA8075/10S
MA8082-M (TX)



TLR124



TLS221

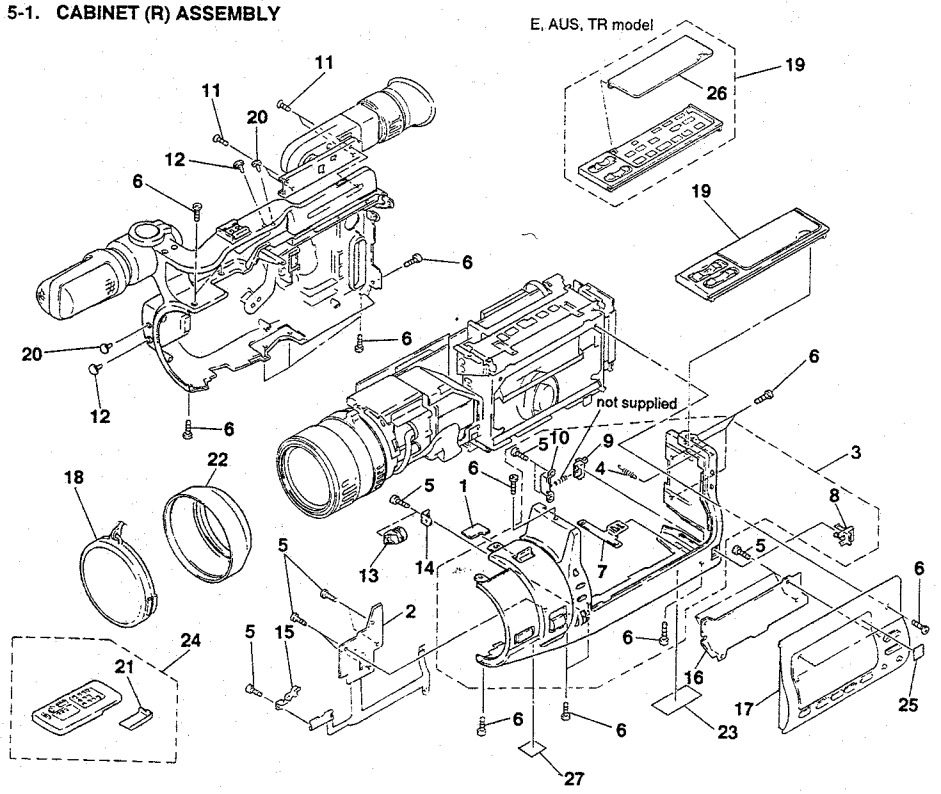


SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Tourist model is abbreviated as TR, and also Australian model is AUS.

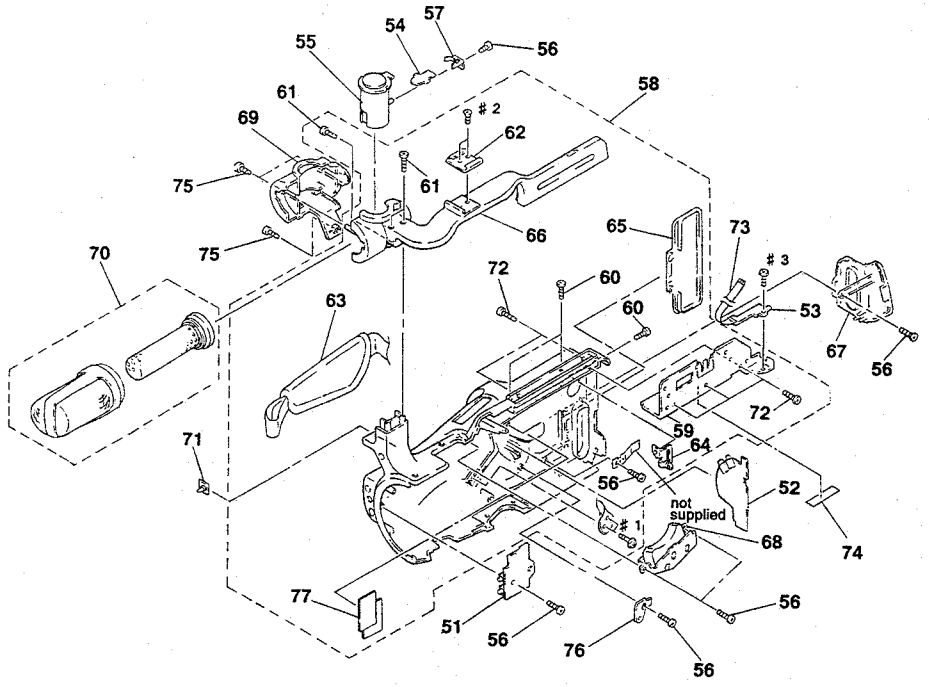
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (R) ASSEMBLY



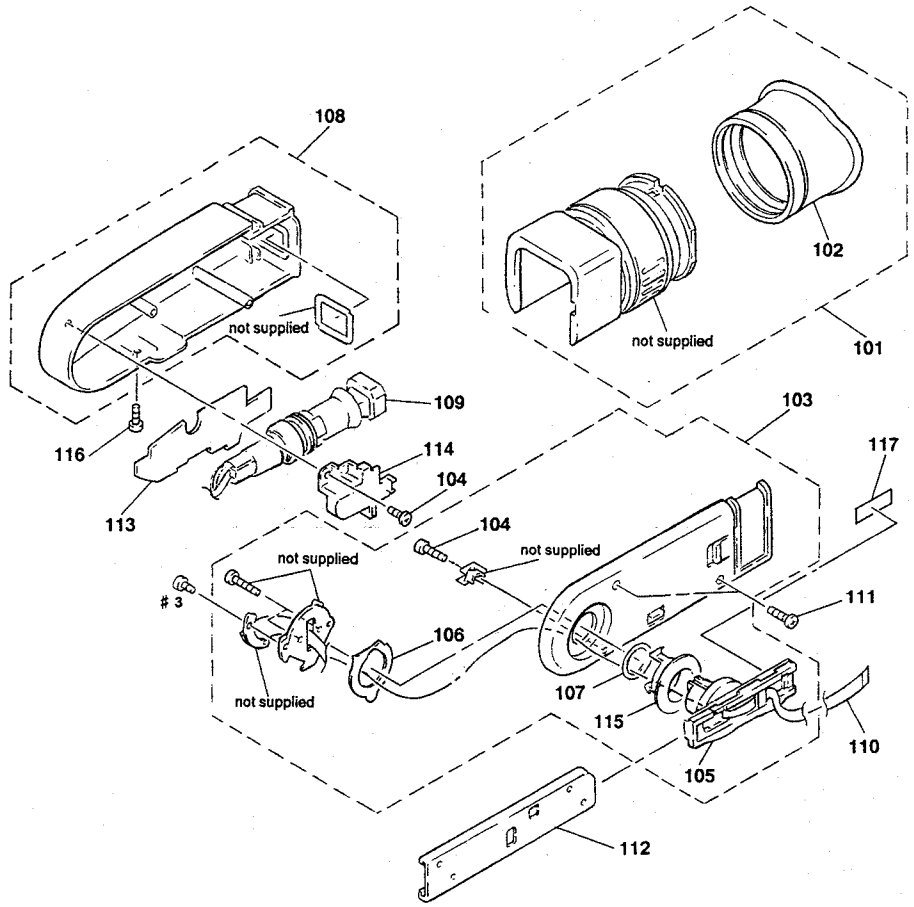
Ref.No.	Part No.	Description	Remark
1	A-7071-810-A	ND-11P BOARD, COMPLETE	
2	A-7071-811-A	CK-58P BOARD, COMPLETE	
3	X-3942-541-1	CABINET (R) ASSY	
4	3-674-402-00	SPRING, TENSION	
5	3-713-790-11	SCREW (M2X5), TAPPING, P3	
6	3-719-381-01	SCREW (M2X4)	
7	3-949-618-01	SHEET METAL (R), STRAP	
8	3-949-648-01	KNOB, BATTERY	
9	3-949-649-01	LOCK, BATTERY	
* 10	3-949-651-01	RETAINER, LOCK, BATTERY	
11	3-719-831-41	SCREW (M2X3)	
12	3-728-267-01	COVER, 3.5 JACK	
13	1-692-282-11	SWITCH, ROTARY (2100)	
14	3-949-622-01	RETAINER, DIAL	
* 15	3-949-623-01	BRACKET, FE	
16	A-7063-560-A	FD-47P BOARD, COMPLETE	
17	X-3942-563-1	LID ASSY, CASSETTE	
18	X-3942-912-1	CAP ASSY, HOOD	
19	1-466-794-21	SWITCH BLOCK, CONTROL (VK2100) (E, AUS, TR)	
19	1-466-794-31	SWITCH BLOCK, CONTROL (VK2100) (AEP, UK)	
20	3-728-266-01	COVER, 2.5 JACK	
21	3-742-854-11	COVER, BATTERY	
22	3-949-543-01	HOOD, LENS	
* 23	3-952-167-01	LABEL, MODEL NUMBER (AEP)	
* 23	3-952-186-01	LABEL, MODEL NUMBER (UK, E, AUS, TR)	
24	1-466-795-21	REMOTE COMMANDER (RMT-702) (E, AUS, TR)	
24	1-466-795-31	REMOTE COMMANDER (RMT-702) (AEP, UK)	
* 25	3-703-713-41	STICKER, SONY SYMBOL (10)	
26	3-950-121-01	LID, CONTROL SW (E)	
* 27	3-704-235-01	LABEL, CAUTION (UK)	

5-2. CABINET (L) ASSEMBLY



Ref.No.	Part No.	Description	Remark
51	A-7063-562-A	MJ-53P BOARD, COMPLETE	
52	A-7071-812-A	SW-203P BOARD, COMPLETE	
53	A-7071-813-A	TB-23P BOARD, COMPLETE	
54	A-7063-563-A	RM-63P BOARD, COMPLETE	
55	X-3942-544-1	CATCHER ASSY, RAY	
56	3-713-790-11	SCREW (M2X5), TAPPING, P3	
* 57	3-949-590-01	RETAINER, RM PC BOARD	
58	X-3942-606-1	CABINET (L) ASSY (AEP, UK)	
58	X-3942-890-1	CABINET (L) ASSY (E, AUS, TR)	
* 59	X-3942-016-1	BRACKET ASSY, HANDLE	
60	3-719-381-01	SCREW (M2X4)	
61	3-713-790-31	SCREW (M2X8), TAPPING, P3	
62	3-724-511-21	SHOE, ACCESSORY	
63	3-949-559-11	BELT, GRIP	
64	3-949-626-01	SHEET METAL (L), STRAP	
65	3-949-670-11	LID, CONNECTOR (E, AUS, TR)	
65	3-949-670-21	LID, CONNECTOR (AEP, UK)	
* 66	3-949-682-11	HANDLE	
67	X-3942-543-1	BASE ASSY, SP	
68	1-692-285-11	SWITCH, PUSH (2100)	
69	3-949-672-11	CABINET, MICROPHONE	
70	8-814-274-00	MICROPHONE, BUILT-IN C-2035	
71	A-7071-814-A	FT-74P BOARD, COMPLETE	
72	3-719-381-21	SCREW (M2X6)	
73	1-696-590-11	CABLE, FLAT (FFC) 4P	
74	3-831-441-XX	CUSHION, SPEAKER	
75	3-713-790-21	SCREW (M2X6), TAPPING, P3	
* 76	3-950-511-02	RETAINER, SW	
* 77	X-3942-899-1	SHEET ASSY, CN BLIND	

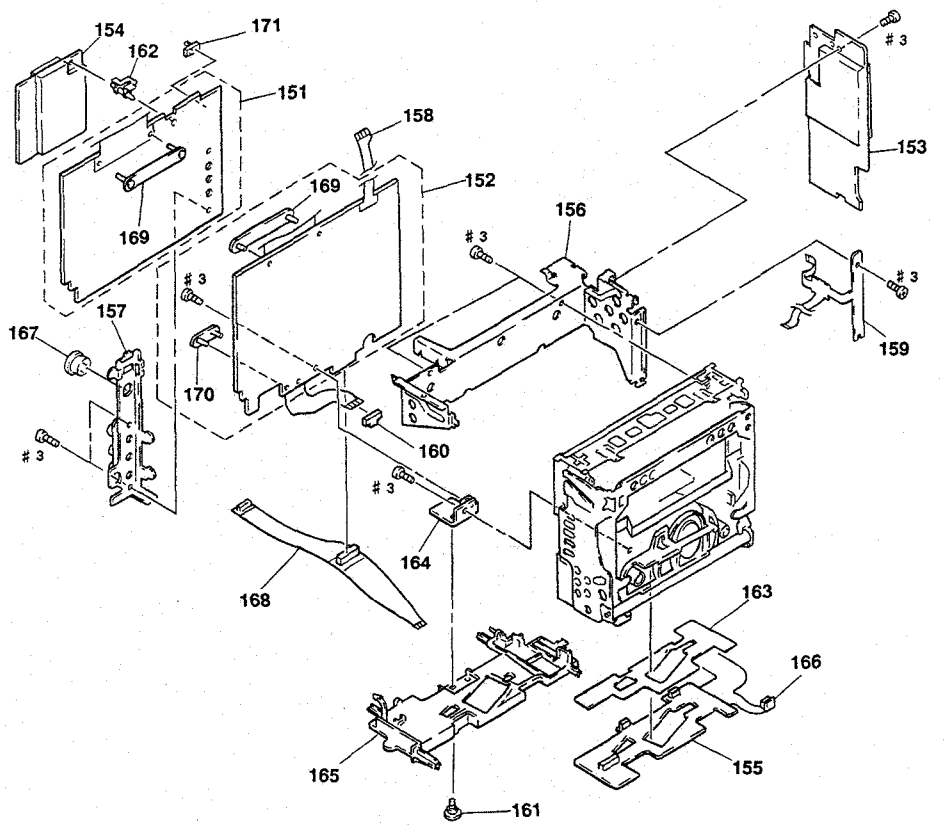
5-3. EVF ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

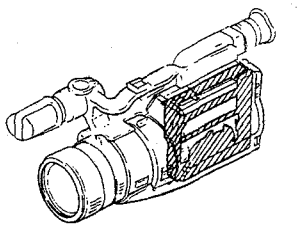
Ref.No.	Part No.	Description	Remark
101	X-3942-012-1	FINDER ASSY	
102	3-749-142-11	EYE CUP	
103	X-3942-013-1	CABINET (R) ASSY, VF	
104	3-713-790-11	SCREW (M2X5), TAPPING, P3	
105	3-949-669-01	TS (BASE)	
106	3-747-110-01	SPRING, LEAF, TILT	
107	3-747-112-01	RING, TILT	
108	X-3942-545-1	CABINET (L) ASSY, VF	
⚠109	1-452-672-11	CRT ASSY (M01KKX08WB10)	
110	1-645-405-11	FP-532 FLEXIBLE BOARD	
111	3-713-790-31	SCREW (M2X8), TAPPING, P3	
112	3-949-642-01	SHOE, VF	
113	A-7063-561-A	VF-41P BOARD, COMPLETE	
* 114	3-949-587-01	RETAINER, VF HARNESS	
115	3-747-109-01	SLEEVE, EVF	
116	3-719-381-01	SCREW (M2X4)	
117	3-949-584-01	PLATE, BLIND, VF	

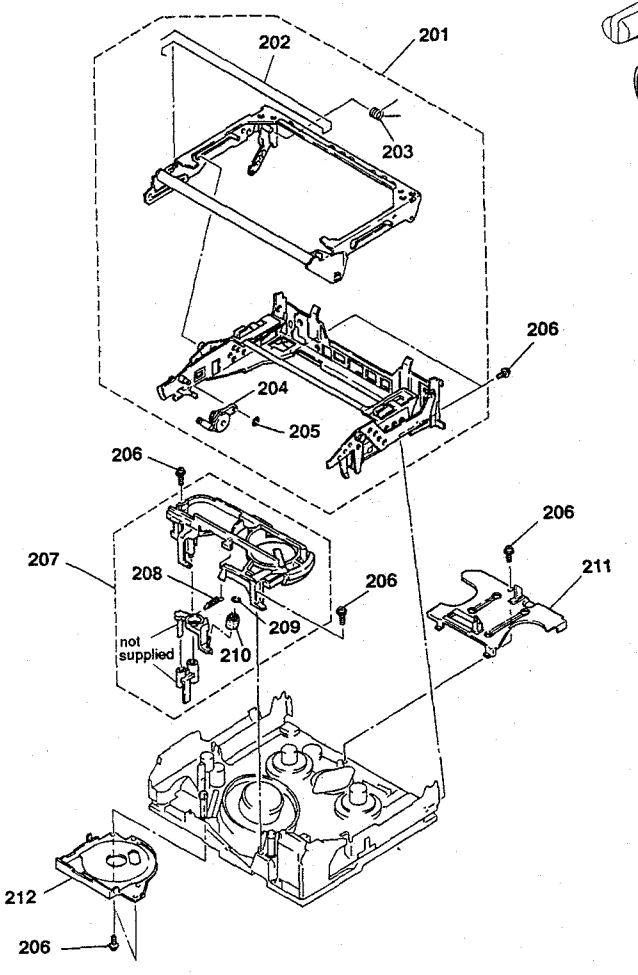
5-4. MAIN BOARDS ASSEMBLY



Ref.No.	Part No.	Description	Remark
151	A-7063-551-A	VI-122 BOARD, COMPLETE (AEP, UK)	
151	A-7063-590-A	VI-122 BOARD, COMPLETE (E, AUS, TR)	
152	A-7063-555-A	SA-49 BOARD, COMPLETE	
153	A-7063-552-A	FU-107P BOARD, COMPLETE	
154	A-7063-553-A	CR-42P BOARD, COMPLETE	
155	A-7063-554-A	CC-74P BOARD, COMPLETE	
* 156	X-3942-020-1	FRAME (UPPER) ASSY, MD	
157	1-537-451-11	TERMINAL BOARD	
158	1-645-403-11	FP-526 FLEXIBLE BOARD	
159	1-645-406-11	FP-533 FLEXIBLE BOARD	
160	1-691-471-11	CONNECTOR, TRANSLATION 11P	
161	3-732-791-31	SCREW (M2X3)	
162	3-742-816-11	SUPPORT (V), PC BOARD	
163	3-949-554-01	SHEET, SHIELD, CC	
* 164	3-949-657-01	FRAME, MD SUB	
* 165	3-949-680-01	FRAME (LOWER), MD	
166	1-568-323-11	CONNECTOR 4P, BOARD TO BOARD	
167	1-566-850-31	CONNECTOR, (S) TERMINAL 4P	
168	1-645-404-11	FP-531 FLEXIBLE BOARD	
169	X-3942-008-1	HOLDER (A) ASSY, FP	
170	X-3942-009-1	HOLDER (B) ASSY, FP	
171	3-744-743-11	KNOB, IO SELECTION (E, AUS, TR)	

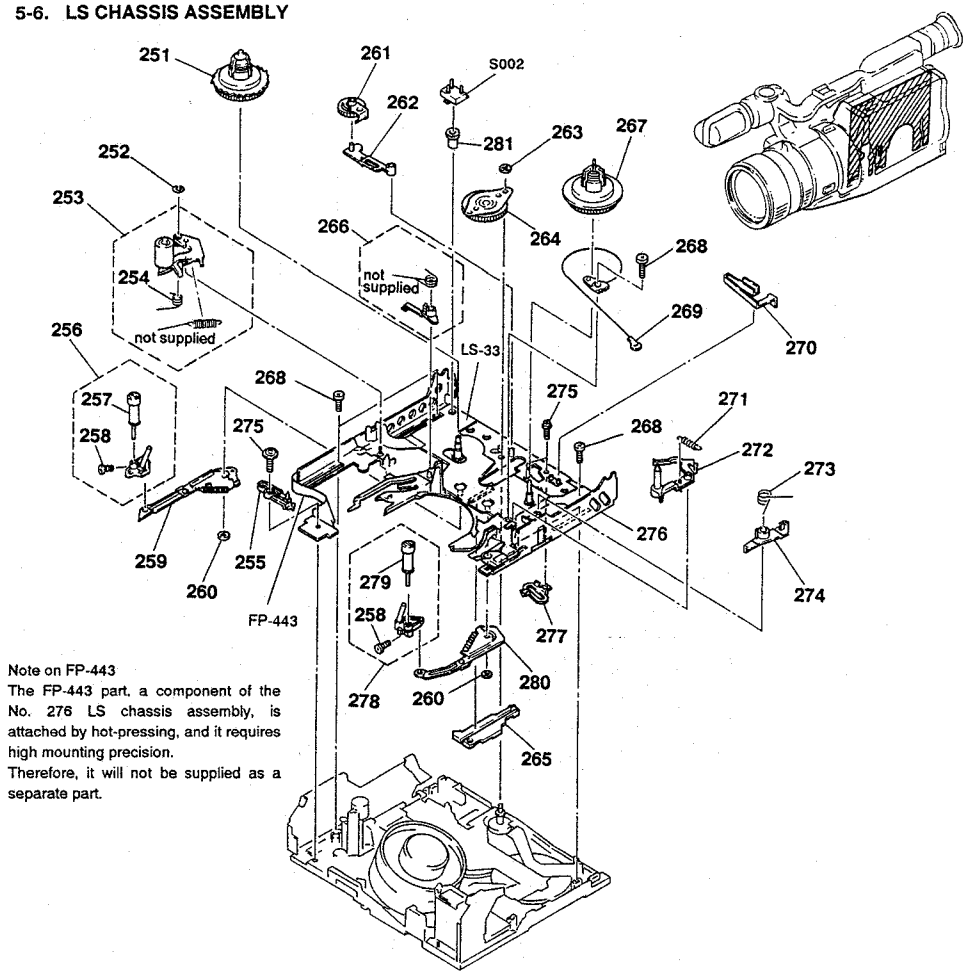
5-5. CASSETTE COMPARTMENT ASSEMBLY





Ref.No.	Part No.	Description	Remark
201	A-7040-312-K	CASSETTE COMPARTMENT BLOCKASSY	
202	3-945-773-01	BAR, TORSION	
203	3-945-771-01	SPRING, TORSION	
204	X-3941-287-2	DAMPER ASSY	
205	3-315-384-31	WASHER, STOPPER	
206	3-947-503-01	SCREW (M1.4X2.5)	
207	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
208	3-945-760-01	SPRING, TENSION	
209	3-321-393-01	WASHER, STOPPER	
210	X-3166-813-1	ROLLER ASSY, HC	
211	X-3941-280-1	RETAINER ASSY, GOOSENECK	
212	3-945-733-01	COVER, CAPSTAN	

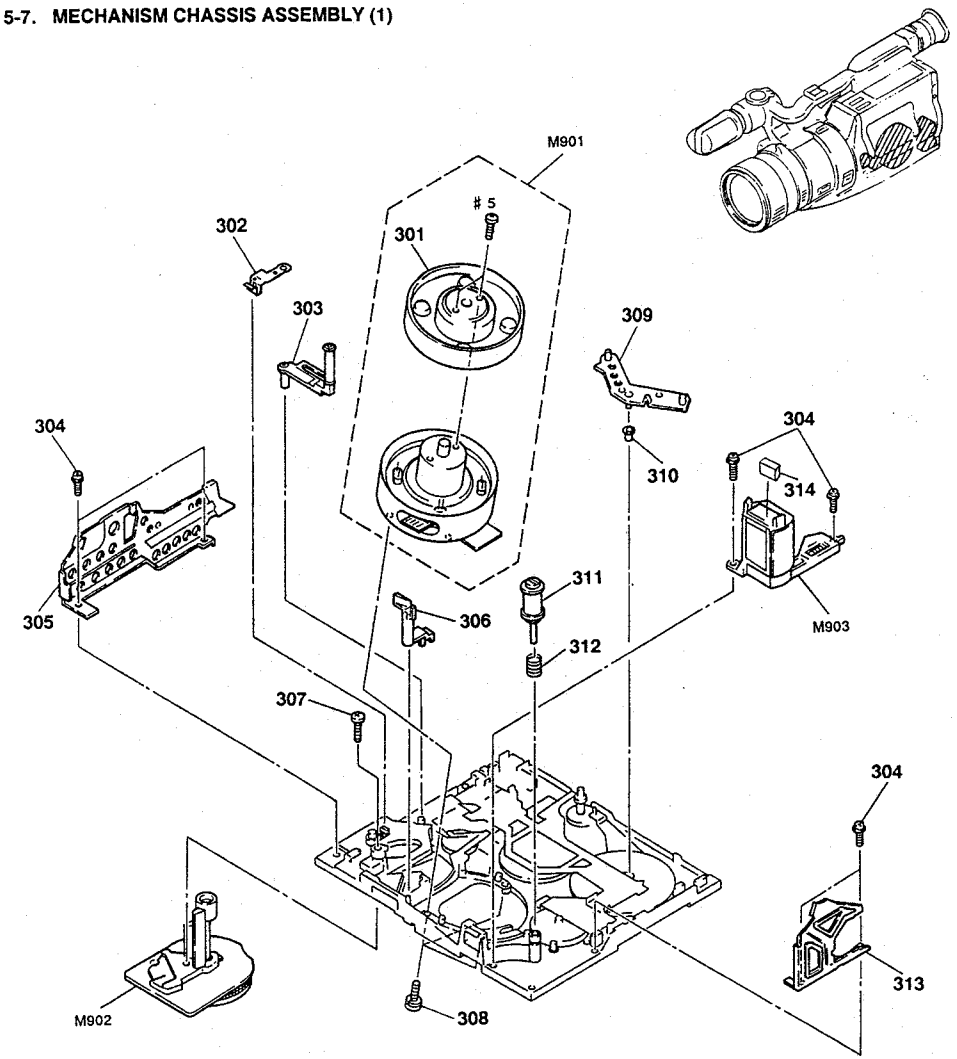
5-6. LS CHASSIS ASSEMBLY



Note on FP-443
The FP-443 part, a component of the No. 276 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

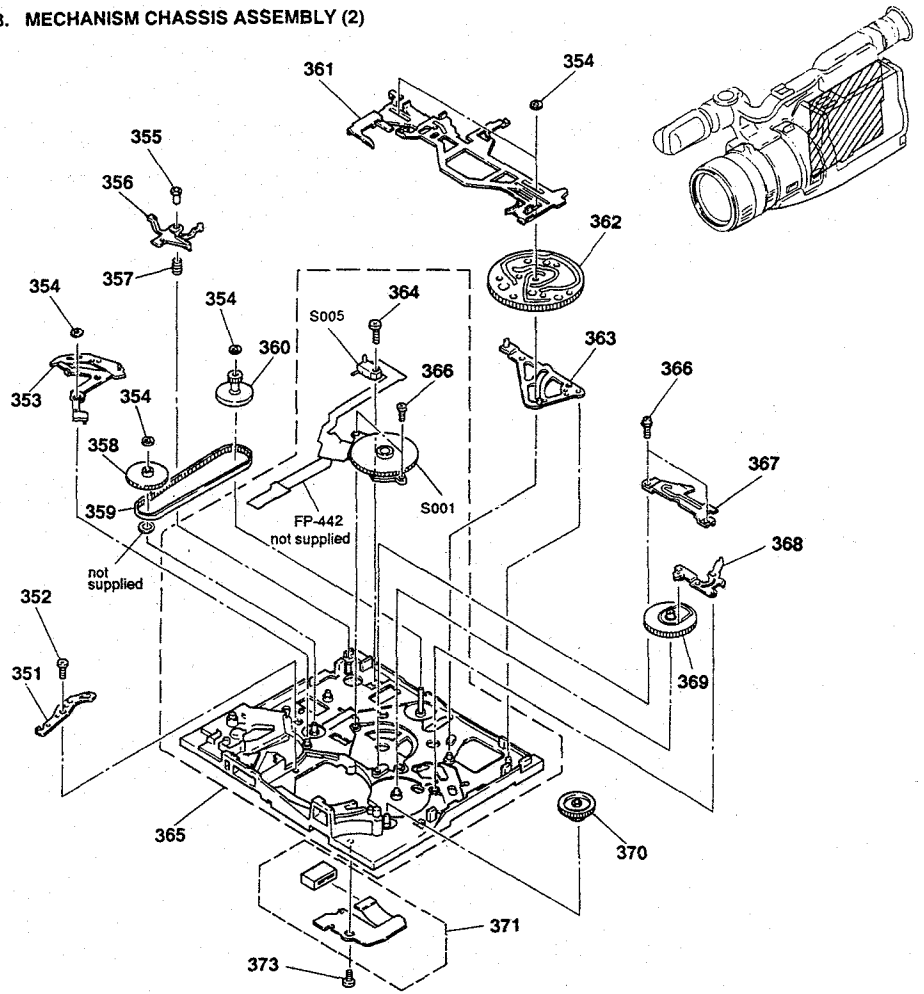
Ref.No.	Part No.	Description	Remark
251	X-3941-274-1	TABLE ASSY, REEL, T	
252	3-331-007-21	WASHER	
253	X-3941-271-5	ARM ASSY, PINCH	
254	3-945-743-01	SPRING, TORSION	
255	3-947-644-01	RETAINER, TG5 (BASE)	
256	A-7040-322-A	GUIDE (BASE) (T) BLOCK ASSY(2)	
257	X-3941-756-1	ROLLER ASSY (2), TG6	
258	3-947-504-01	SCREW (M1.2X2)	
259	X-3941-267-1	ARM (T) ASSY, GUIDE	
260	3-669-465-00	WASHER (1.5), STOPPER	
261	X-3941-273-1	SOFT ASSY, T	
262	3-945-753-01	ARM, T SOFT	
263	3-726-829-01	WASHER, STOPPER	
264	X-3941-279-5	GEAR ASSY, GOOSENECK	
265	3-945-837-01	SLIDER, GL	
266	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
267	X-3941-275-6	TABLE ASSY, REEL, S	
268	3-945-756-01	SCREW (M1.4X3)	
269	X-3941-277-1	STRING BLOCK ASSY	
270	3-945-801-01	BRAKE, S SOFT	
271	3-948-810-01	SPRING, TENSION	
272	X-3941-276-1	TG1 ASSY	
273	3-945-752-01	SPRING, TORSION	
274	3-945-799-01	BRAKE, S HARD	
275	3-947-503-01	SCREW (M1.4X2.5)	
276	X-3941-265-1	CHASSIS ASSY, LS	
277	3-945-784-01	PLATE, CAM, LS	
278	A-7040-323-A	GUIDE (BASE) (S) BLOCK ASSY(2)	
279	X-3941-755-1	ROLLER ASSY (2), TG3	
280	X-3941-266-1	ARM (S) ASSY, GUIDE	
281	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, TAPE SELECT)	

5-7. MECHANISM CHASSIS ASSEMBLY (1)



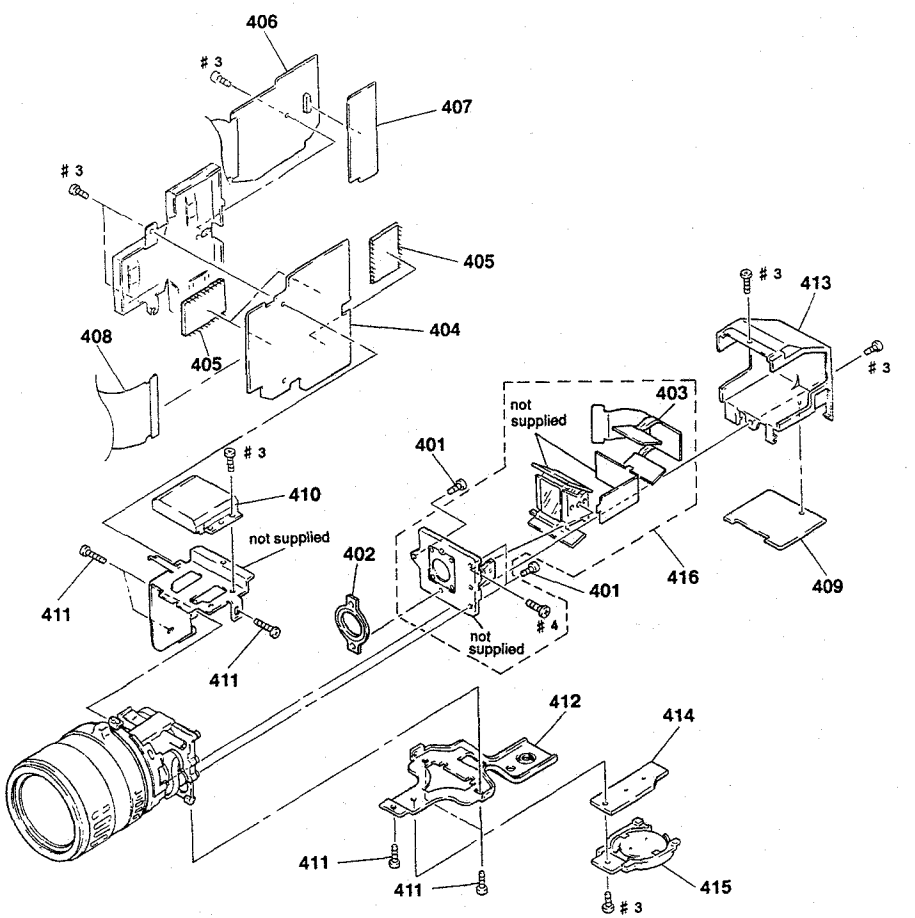
Ref.No.	Part No.	Description	Remark
301	A-7049-610-A	DRUM ASSY, UPPER ROTARY (DGR-96-R)	
302	3-945-822-01	SPRING, LEAF, TG7 ARM	
303	A-7040-305-A	ARM BLOCK ASSY, TG7	
304	3-947-503-01	SCREW (M1.4X2.5)	
305	X-3941-255-1	PLATE (T) ASSY, SIDE	
306	3-945-735-01	ARM, HC CONVERSION	
307	3-713-786-71	SCREW (M2X5)	
308	3-686-493-01	SCREW (M2X5), P1	
309	3-945-701-01	ARM, LS	
310	3-945-702-01	ROLLER, LS	
311	X-3942-193-1	ROLLER ASSY (2), TG2	
312	3-945-774-01	SPRING, COMPRESSION	
313	3-945-691-01	PLATE (S), SIDE	
314	1-568-323-11	CONNECTOR (4P)	
M901	A-7048-669-A	DRUM ASSY (DGH-96A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-8. MECHANISM CHASSIS ASSEMBLY (2)



Ref.No.	Part No.	Description	Remark
351	3-945-734-01	ARM, HC DRIVING	
352	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
353	X-3941-259-1	ARM ASSY, PINCH PRESS	
354	3-726-829-01	WASHER, STOPPER	
355	3-945-730-01	SLEEVE, EJECT	
356	3-945-706-01	LEVER, EJECT	
357	3-945-729-01	SPRING, COMPRESSION	
358	X-3941-256-1	GEAR ASSY, CHANGE	
359	3-944-539-01	BELT, RELAY	
360	3-945-695-01	PULLEY, RELAY	
361	X-3941-260-1	SLIDER ASSY, M	
362	3-945-696-01	CAM	
363	X-3941-258-1	ARM ASSY, GL	
364	3-713-786-71	SCREW (M2X5)	
365	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
366	3-947-503-01	SCREW (M1.4X2.5)	
367	3-945-722-01	RETAINER, GEAR	
368	X-3941-257-1	ARM ASSY, FF	
369	3-945-697-01	GEAR (B), L	
370	3-945-700-01	GEAR (A), L	
371	A-7040-311-A	FP-444 ASSY	
373	3-945-756-01	SCREW (M1.4X3)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-9. CAMERA BLOCK ASSEMBLY



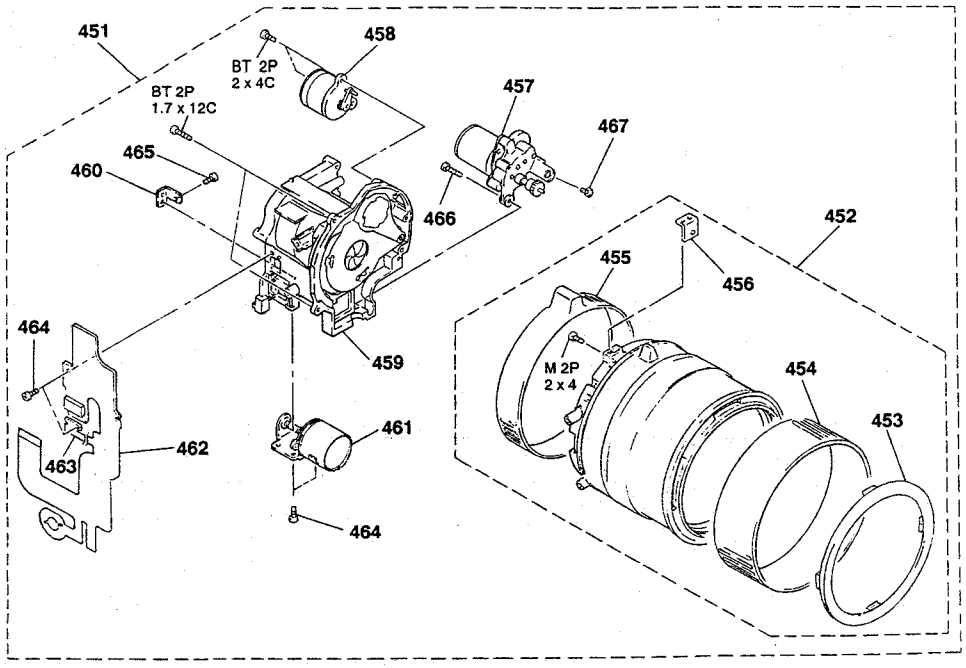
Note 1

For replacement of prism CCD assy (N) and FP-530 board complete read carefully the CAUTIONS FOR REPLACEMENT OF CCD IMAGER on page 113.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
401	3-947-268-11	SCREW (B TIGHT) (2X7.5), TAPPING	
* 402	3-949-094-01	RUBBER, PL SEAL	
403	A-7071-704-A	FP-530 BOARD, COMPLETE (NOTE 1)	
404	A-7063-556-A	CD-85P BOARD, COMPLETE	
405	A-7068-197-A	DT-104A HIC BOARD, COMPLETE	
406	A-7063-557-A	VC-116P BOARD, COMPLETE	
407	A-7063-558-A	VC-119P BOARD, COMPLETE	
408	1-645-318-11	FP-529 FLEXIBLE BOARD	
409	A-7063-559-A	AF-90P BOARD, COMPLETE	
⚠410	1-466-731-11	CONVERTER UNIT, DC-DC	
411	3-949-631-01	SCREW (B) (2X5)	
* 412	3-949-676-01	SHEET METAL, TRIPOD	
* 413	3-949-684-01	FRAME (A), C	
414	A-7071-815-A	LI-42P BOARD, COMPLETE	
* 415	3-949-677-01	HOLDER, LITHIUM	
416	A-7030-386-A	CCD ASSY (P), PRISM (NOTE 1)	

5-10. ZOOM LENS ASSEMBLY



Ref. No.	Part No.	Description	Remark
451	1-547-537-11	LENS, ZOOM (VCL-5512WA)	
452	3-708-519-01	BLOCK ASSY, FRONT	
453	3-708-520-01	NAME RING, FOCUS	
454	3-708-529-01	RUBBER, FOCUS	
455	3-708-530-01	RUBBER, ZOOM	
456	3-708-521-01	BRACKET, CABINET	
457	3-708-525-01	MOTOR ASSY, ZOOM	
458	3-708-523-01	METER ASSY, IRIS	
459	3-708-522-01	BLOCK ASSY, REAR	
460	3-708-528-01	BRACKET, SHIELD CASE	
461	3-708-524-01	MOTOR ASSY, STEPPING (FOCUS)	
462	3-708-526-01	PSD BOARD ASSY	
463	3-708-527-01	LED BOARD ASSY	
464	3-708-665-01	SCREW BT 2P 1.7X4C	
465	3-708-570-01	SCREW BT 2P 1.7X3C	
466	3-707-501-01	SCREW, FITTING B	
467	3-707-663-01	SCREW, FITTING A	

SECTION 6
ELECTRICAL PARTS LIST

AF-90P

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Hardware (# mark) list is given in the last of this parts list.
- Tourist model is abbreviated as TR, and also Australian model is AUS.

Ref. No.	Part No.	Description			Remark
*	A-7063-559-A	AF-90P BOARD, COMPLETE			
		**********			
		(Ref. No. 3,000 Series)			
		< CAPACITOR >			
C001	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C002	1-164-346-11	CERAMIC CHIP	1uF		16V
C003	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C004	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C005	1-164-346-11	CERAMIC CHIP	1uF		16V
C006	1-164-346-11	CERAMIC CHIP	1uF		16V
C007	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C008	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C009	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C010	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C011	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C012	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C013	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C014	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C015	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C016	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C018	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C019	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C020	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C021	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C022	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C023	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C024	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C025	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C026	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C027	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C028	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C029	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C030	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C031	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C032	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C033	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C034	1-164-346-11	CERAMIC CHIP	1uF		16V
C035	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C036	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C039	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C041	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C042	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C043	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C044	1-164-346-11	CERAMIC CHIP	1uF		16V
C045	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C046	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C047	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C048	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C049	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C050	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C051	1-128-285-11	ELECT	330uF	20%	6.3V
C052	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
		< CONNECTOR >			
CN001	1-573-363-21	CONNECTOR, FFC/FPC 23P			
CN002	1-573-293-21	PIN, CONNECTOR (1.5MM) (SMD) 2P			
* CN003	1-580-055-21	PIN, CONNECTOR 2P			
CN004	1-695-523-11	PIN, CONNECTOR (1.5MM) (SMD) 4P			
		< DIODE >			
D001	8-719-422-97	DIODE MA8091-M			
		< FILTER >			
FL001	1-239-111-21	FILTER, LOW PASS			
		< IC >			
IC001	8-759-066-55	IC TA75W393FU			
IC002	8-759-066-61	IC TC4053BFS			
IC003	8-759-059-03	IC LM324PW			
IC004	8-752-355-56	IC CXD2104BN			
IC005	8-759-058-47	IC MPC1724VM			
IC006	8-759-823-51	IC LB1830M			
IC007	8-759-513-26	IC XRU5846FS			
IC008	8-759-059-03	IC LM324PW			
IC009	8-759-823-51	IC LB1830M			
		< COIL >			
L001	1-410-655-31	INDUCTOR CHIP 120uH			
L002	1-410-381-11	INDUCTOR CHIP 10uH			
L003	1-410-381-11	INDUCTOR CHIP 10uH			
L004	1-410-381-11	INDUCTOR CHIP 10uH			
L005	1-412-058-11	INDUCTOR CHIP 10uH			
L006	1-410-381-11	INDUCTOR CHIP 10uH			
		< TRANSISTOR >			
Q001	8-729-427-74	TRANSISTOR XP4601			
Q002	8-729-010-75	TRANSISTOR MSC4116-BC			

Ref.No.	Part No.	Description				Remark
Q003	8-729-427-72	TRANSISTOR	XP4501			
Q004	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q005	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q006	8-729-427-72	TRANSISTOR	XP4501			
Q007	8-729-427-72	TRANSISTOR	XP4501			
Q008	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q009	8-729-427-72	TRANSISTOR	XP4501			
Q010	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q011	8-729-427-70	TRANSISTOR	XP4401			
Q012	8-729-427-72	TRANSISTOR	XP4501			
Q013	8-729-427-72	TRANSISTOR	XP4501			
Q014	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q015	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q016	8-729-402-45	TRANSISTOR	UN5212			
Q017	8-729-427-70	TRANSISTOR	XP4401			
Q018	8-729-427-70	TRANSISTOR	XP4401			
Q019	8-729-402-45	TRANSISTOR	UN5212			
Q020	8-729-403-35	TRANSISTOR	UN5113			
		< RESISTOR >				
R001	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R002	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R003	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R004	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R005	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R006	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R007	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R008	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R009	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R010	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R011	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R012	1-216-813-11	METAL CHIP	220	5%	1/16W	
R013	1-216-813-11	METAL CHIP	220	5%	1/16W	
R014	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R015	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R016	1-216-818-11	METAL CHIP	560	5%	1/16W	
R017	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R018	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R019	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R020	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R021	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R022	1-216-820-11	METAL CHIP	820	5%	1/16W	
R023	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R024	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R025	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R026	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R027	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R028	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R029	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R030	1-216-817-11	METAL CHIP	470	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R031	1-216-817-11	METAL CHIP	470	5%	1/16W	
R032	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R033	1-216-814-11	METAL CHIP	270	5%	1/16W	
R034	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R035	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R036	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R037	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R038	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R039	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R040	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R041	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R042	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R043	1-216-815-11	METAL CHIP	330	5%	1/16W	
R044	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R045	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R046	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R047	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R048	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R049	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R050	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R051	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R052	1-216-817-11	METAL CHIP	470	5%	1/16W	
R053	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R054	1-216-816-11	METAL CHIP	390	5%	1/16W	
R055	1-216-809-11	METAL CHIP	100	5%	1/16W	
R056	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R057	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R058	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R059	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R063	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R064	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R065	1-216-864-11	METAL CHIP	0	5%	1/16W	
R066	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R067	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R068	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R069	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R070	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R071	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R072	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R073	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R074	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R075	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R076	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R077	1-216-816-11	METAL CHIP	390	5%	1/16W	
R078	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R079	1-216-031-00	METAL CHIP	180	5%	1/10W	
R080	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R081	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R082	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R083	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R085	1-216-864-11	METAL CHIP	0	5%	1/16W	
R086	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R087	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R088	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R089	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R090	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R091	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R092	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R093	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R094	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R095	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R096	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R097	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R098	1-216-815-11	METAL CHIP	330	5%	1/16W	
R099	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R101	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R102	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R103	1-216-049-00	METAL CHIP	1K	5%	1/10W	
		< FLEXIBLE BOARD >				
W001	1-645-317-11	FP-528 FLEXIBLE BOARD				

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*	A-7063-554-A	CC-74P BOARD, COMPLETE				
		**********				
		(Ref. No. 5,000 Series)				
		< CAPACITOR >				
C301	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C302	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C305	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C309	1-128-004-11	ELECT CHIP	10uF	20%	16V	
		< CONNECTOR >				
CN301	1-691-482-21	CONNECTOR, FFC/FPC 15P				
CN302	1-691-472-21	CONNECTOR, FFC/FPC 6P				
CN303	1-691-473-21	CONNECTOR, FFC/FPC 7P				
		< IC >				
IC301	8-759-059-09	IC LB8111V				
		< TRANSISTOR >				
Q301	8-729-403-17	TRANSISTOR XN1215				
		< RESISTOR >				
R301	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R302	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R303	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R304	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R305	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R306	1-216-864-11	METAL CHIP	0	5%	1/16W	
R307	1-216-845-11	METAL CHIP	100K	5%	1/16W	
		< FLEXIBLE BOARD >				
W301	1-645-401-11	MOUNTED PC BOARD, FLEXIBLE				
W302	1-696-588-11	WIRE (FLAT TYPE) (6 CORE)				

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*	A-7063-556-A	CD-85P BOARD, COMPLETE				
		**********				
		(Ref. No. 2,000 Series)				
		< CAPACITOR >				
C101	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C104	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C105	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C107	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C108	1-135-079-21	TANTALUM CHIP	3.3uF	10%	35V	
C109	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C112	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	
C115	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C116	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V	
C131	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C191	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C201	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V	
C202	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C203	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C204	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C205	1-135-079-21	TANTALUM CHIP	3.3uF	10%	35V	
C206	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C209	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	
C212	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C213	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V	
C214	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C215	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C216	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C217	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	
C218	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V	
C219	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V	
C220	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C221	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C291	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C302	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C303	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C304	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	

Ref.No.	Part No.	Description			Remark
C305	1-135-079-21	TANTALUM CHIP	3.3uF	10%	35V
C306	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C308	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C309	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C331	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C391	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C403	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C404	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C405	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C407	1-164-346-11	CERAMIC CHIP	1uF		16V
C408	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C410	1-135-148-21	TANTALUM CHIP	1.5uF	20%	10V
C411	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C413	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C416	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C420	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C491	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C492	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C493	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C494	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C496	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C498	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C499	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C536	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C571	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C572	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C573	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C574	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C575	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
CN101	1-695-875-21	CONNECTOR, BOARD TO BOARD 42P			
CN104	1-569-775-21	PIN, CONNECTOR 5P			
CN106	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
* CN107	1-580-055-21	PIN, CONNECTOR 2P			
		< TRIMMER >			
CT401	1-141-424-11	CAP, ADJ			
		< DIODE >			
D101	8-719-820-05	DIODE	1SS181		
D103	8-719-404-46	DIODE	MA110		
D201	8-719-820-05	DIODE	1SS181		
D203	8-719-404-46	DIODE	MA110		
D205	8-719-404-46	DIODE	MA110		
D301	8-719-820-05	DIODE	1SS181		
D303	8-719-404-46	DIODE	MA110		

Ref.No.	Part No.	Description		Remark
D401	8-719-404-46	DIODE	MA110	
D402	8-719-949-46	DIODE	1T32	
D491	8-719-800-76	DIODE	1SS226	
D492	8-719-800-76	DIODE	1SS226	
D493	8-719-800-76	DIODE	1SS226	
D494	8-719-800-76	DIODE	1SS226	
		< FILTER >		
FL101	1-236-208-11	FILTER, LOW PASS		
FL201	1-236-208-11	FILTER, LOW PASS		
FL301	1-236-208-11	FILTER, LOW PASS		
		< HIC >		
HIC101	A-7068-197-A	DT-104 BOARD, COMPLETE		
HIC201	A-7068-197-A	DT-104 BOARD, COMPLETE		
HIC301	A-7068-197-A	DT-104 BOARD, COMPLETE		
		< IC >		
IC401	8-752-339-77	IC	CXD2111R	
IC402	8-759-064-36	IC	MB88346BPFV	
IC403	8-759-036-17	IC	MC74AC00M	
IC404	8-759-036-17	IC	MC74AC00M	
IC405	8-759-038-64	IC	MC74AC74M	
IC504	8-759-064-36	IC	MB88346BPFV	
IC512	8-759-059-03	IC	LM324PW	
IC571	8-759-066-59	IC	TC74HC4053AFS	
		< COIL >		
L101	1-410-381-11	INDUCTOR CHIP	10uH	
L102	1-410-381-11	INDUCTOR CHIP	10uH	
L103	1-410-389-31	INDUCTOR CHIP	47uH	
L201	1-410-381-11	INDUCTOR CHIP	10uH	
L202	1-412-052-21	INDUCTOR CHIP	1uH	
L203	1-410-389-31	INDUCTOR CHIP	47uH	
L204	1-412-052-21	INDUCTOR CHIP	1uH	
L205	1-412-052-21	INDUCTOR CHIP	1uH	
L207	1-412-052-21	INDUCTOR CHIP	1uH	
L301	1-410-381-11	INDUCTOR CHIP	10uH	
L302	1-410-389-31	INDUCTOR CHIP	47uH	
L401	1-412-006-31	INDUCTOR CHIP	10uH	
L402	1-412-063-21	INDUCTOR CHIP	68uH	
L491	1-412-052-21	INDUCTOR CHIP	1uH	
L492	1-412-390-21	INDUCTOR CHIP	0uH	
L493	1-412-390-21	INDUCTOR CHIP	0uH	
L494	1-412-390-21	INDUCTOR CHIP	0uH	
L501	1-410-381-11	INDUCTOR CHIP	10uH	
		< TRANSISTOR >		
Q102	8-729-403-27	TRANSISTOR	XN4401	
Q103	8-729-402-81	TRANSISTOR	XN4501	

Ref.No.	Part No.	Description		Remark
Q104	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q105	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q106	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q201	8-729-402-81	TRANSISTOR	XN4501	
Q203	8-729-403-27	TRANSISTOR	XN4401	
Q204	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q205	8-729-402-84	TRANSISTOR	XN4601	
Q206	8-729-402-84	TRANSISTOR	XN4601	
Q207	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q208	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q218	8-729-402-81	TRANSISTOR	XN4501	
Q219	8-729-402-84	TRANSISTOR	XN4601	
Q220	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q302	8-729-403-27	TRANSISTOR	XN4401	
Q303	8-729-402-81	TRANSISTOR	XN4501	
Q304	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q305	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q306	8-729-010-75	TRANSISTOR	MSC4116-BC	
Q401	8-729-232-86	TRANSISTOR	2SK1875	
		< RESISTOR >		
R107	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R108	1-216-815-11	METAL CHIP	330 5% 1/16W	
R109	1-216-836-11	METAL CHIP	18K 5% 1/16W	
R111	1-216-844-11	METAL CHIP	82K 5% 1/16W	
R112	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R113	1-216-850-11	METAL CHIP	270K 5% 1/16W	
R116	1-216-835-11	METAL CHIP	15K 5% 1/16W	
R121	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R122	1-216-844-11	METAL CHIP	82K 5% 1/16W	
R123	1-216-835-11	METAL CHIP	15K 5% 1/16W	
R124	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R125	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R126	1-216-817-11	METAL CHIP	470 5% 1/16W	
R127	1-216-840-11	METAL CHIP	39K 5% 1/16W	
R128	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R129	1-218-289-11	METAL CHIP	510 5% 1/16W	
R130	1-216-817-11	METAL CHIP	470 5% 1/16W	
R131	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	
R132	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R200	1-216-864-11	METAL CHIP	0 5% 1/16W	
R201	1-216-844-11	METAL CHIP	82K 5% 1/16W	
R202	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R203	1-216-864-11	METAL CHIP	0 5% 1/16W	
R204	1-216-835-11	METAL CHIP	15K 5% 1/16W	
R205	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R206	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R207	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R209	1-216-836-11	METAL CHIP	18K 5% 1/16W	
R210	1-216-844-11	METAL CHIP	82K 5% 1/16W	

Ref.No.	Part No.	Description			Remark
R211	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R212	1-216-850-11	METAL CHIP	270K	5% 1/16W	
R215	1-216-835-11	METAL CHIP	15K	5% 1/16W	
R218	1-216-864-11	METAL CHIP	0	5% 1/16W	
R221	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R222	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R223	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R225	1-216-830-11	METAL CHIP	5.6K	5% 1/16W	
R226	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R227	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R228	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R229	1-216-841-11	METAL CHIP	47K	5% 1/16W	
R230	1-218-700-11	METAL CHIP	2.2K	0.50% 1/16W	
R231	1-216-822-11	METAL CHIP	1.2K	5% 1/16W	
R232	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R233	1-216-795-11	METAL CHIP	6.8K	0.50% 1/16W	
R234	1-216-837-11	METAL CHIP	22K	5% 1/16W	
R235	1-216-817-11	METAL CHIP	470	5% 1/16W	
R236	1-216-840-11	METAL CHIP	39K	5% 1/16W	
R237	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R238	1-218-289-11	METAL CHIP	510	5% 1/16W	
R239	1-216-817-11	METAL CHIP	470	5% 1/16W	
R243	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R302	1-216-844-11	METAL CHIP	82K	5% 1/16W	
R303	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R304	1-216-835-11	METAL CHIP	15K	5% 1/16W	
R305	1-216-857-11	METAL CHIP	1M	5% 1/16W	
R306	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R307	1-216-843-11	METAL CHIP	68K	5% 1/16W	
R309	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R310	1-216-844-11	METAL CHIP	82K	5% 1/16W	
R311	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R312	1-216-850-11	METAL CHIP	270K	5% 1/16W	
R315	1-216-835-11	METAL CHIP	15K	5% 1/16W	
R325	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R326	1-216-817-11	METAL CHIP	470	5% 1/16W	
R327	1-218-289-11	METAL CHIP	510	5% 1/16W	
R328	1-216-840-11	METAL CHIP	39K	5% 1/16W	
R329	1-216-817-11	METAL CHIP	470	5% 1/16W	
R331	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R332	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R401	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R402	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R403	1-216-811-11	METAL CHIP	150	5% 1/16W	
R404	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R405	1-216-817-11	METAL CHIP	470	5% 1/16W	
R406	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R407	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R411	1-216-864-11	METAL CHIP	0	5% 1/16W	
R412	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	

CD-85P CK-58P

Ref. No.	Part No.	Description			Remark
R413	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R415	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R416	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R417	1-216-849-11	METAL CHIP	220K	5% 1/16W	
R418	1-216-832-11	METAL CHIP	8.2K	5% 1/16W	
R419	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R420	1-216-829-11	METAL CHIP	4.7K	5% 1/16W	
R421	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R422	1-216-864-11	METAL CHIP	0	5% 1/16W	
R423	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R424	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R432	1-216-817-11	METAL CHIP	470	5% 1/16W	
R433	1-216-864-11	METAL CHIP	0	5% 1/16W	
R434	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R435	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R436	1-216-813-11	METAL CHIP	220	5% 1/16W	
R437	1-216-813-11	METAL CHIP	220	5% 1/16W	
R438	1-216-813-11	METAL CHIP	220	5% 1/16W	
R439	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R440	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R441	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R442	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R443	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R444	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R445	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R446	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R447	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R448	1-216-813-11	METAL CHIP	220	5% 1/16W	
R449	1-216-813-11	METAL CHIP	220	5% 1/16W	
R451	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R452	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R453	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R454	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R455	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R456	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R457	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R458	1-216-864-11	METAL CHIP	0	5% 1/16W	
R459	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R461	1-216-864-11	METAL CHIP	0	5% 1/16W	
R462	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R463	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R464	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R465	1-216-813-11	METAL CHIP	220	5% 1/16W	
R466	1-216-813-11	METAL CHIP	220	5% 1/16W	
R468	1-216-850-11	METAL CHIP	270K	5% 1/16W	
R471	1-216-864-11	METAL CHIP	0	5% 1/16W	
R472	1-218-749-11	METAL CHIP	240K	0.50% 1/16W	
R473	1-218-749-11	METAL CHIP	240K	0.50% 1/16W	
R474	1-218-749-11	METAL CHIP	240K	0.50% 1/16W	
R477	1-218-720-11	METAL CHIP	15K	0.50% 1/16W	
R478	1-218-720-11	METAL CHIP	15K	0.50% 1/16W	
R480	1-218-720-11	METAL CHIP	15K	0.50% 1/16W	
R492	1-216-857-11	METAL CHIP	1M	5% 1/16W	
R495	1-216-826-11	METAL CHIP	2.7K	5% 1/16W	
R496	1-216-826-11	METAL CHIP	2.7K	5% 1/16W	
R497	1-216-826-11	METAL CHIP	2.7K	5% 1/16W	
R498	1-216-826-11	METAL CHIP	2.7K	5% 1/16W	
R503	1-216-864-11	METAL CHIP	0	5% 1/16W	
R508	1-216-834-11	METAL CHIP	12K	5% 1/16W	
R515	1-218-704-11	METAL CHIP	3.3K	0.50% 1/16W	
R523	1-216-834-11	METAL CHIP	12K	5% 1/16W	
R530	1-218-704-11	METAL CHIP	3.3K	0.50% 1/16W	
R538	1-216-834-11	METAL CHIP	12K	5% 1/16W	
R545	1-218-704-11	METAL CHIP	3.3K	0.50% 1/16W	
R548	1-216-837-11	METAL CHIP	22K	5% 1/16W	
R549	1-216-837-11	METAL CHIP	22K	5% 1/16W	
R560	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R561	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R562	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R571	1-216-853-11	METAL CHIP	470K	5% 1/16W	
R572	1-216-853-11	METAL CHIP	470K	5% 1/16W	
R573	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R574	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R575	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R577	1-216-840-11	METAL CHIP	39K	5% 1/16W	
R578	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R580	1-216-840-11	METAL CHIP	39K	5% 1/16W	
R581	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R582	1-216-853-11	METAL CHIP	470K	5% 1/16W	
R583	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R584	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R585	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R598	1-216-864-11	METAL CHIP	0	5% 1/16W	
R888	1-216-864-11	METAL CHIP	0	5% 1/16W	
		< VIBRATOR >			
X101	1-577-119-31	OSCILLATOR, CRYSTAL (28.375MHz)			
X401	1-567-733-11	VIBRATOR, CRYSTAL (17MHz)			

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* A-7071-811-A CK-58P BOARD, COMPLETE
****
(Ref. No. 6,000 Series)

< CONNECTOR >

* CN321 1-580-556-11 CONNECTOR, FPC 3P

< RESISTOR >

R321	1-218-152-11	METAL GLAZE	1.5K	1% 1/10W	

CK-58P CR-42P

Ref. No.	Part No.	Description			Remark
R322	1-216-326-11	METAL GLAZE	1.8K	1% 1/10W	
R323	1-216-596-11	METAL GLAZE	2.7K	1% 1/10W	
R324	1-218-155-11	METAL GLAZE	3.9K	1% 1/10W	
R325	1-216-602-11	METAL GLAZE	6.8K	1% 1/10W	
R326	1-216-333-11	METAL CHIP	15K	1% 1/10W	
R327	1-216-748-11	METAL CHIP	39K	1% 1/10W	
R328	1-216-333-11	METAL CHIP	15K	1% 1/10W	
R329	1-216-864-11	METAL CHIP	0	5% 1/16W	
R330	1-216-809-11	METAL CHIP	100	5% 1/16W	
R331	1-216-864-11	METAL CHIP	0	5% 1/16W	
		< SWITCH >			
S321	1-572-921-11	SWITCH, KEY BOARD (COUNTER/TIME CODE)			
S322	1-572-921-11	SWITCH, KEY BOARD (COUNTER RESET)			
S323	1-572-921-11	SWITCH, KEY BOARD (ZERO MEM)			
S324	1-692-283-11	SWITCH, SLIDE (AUTO LOCK)			
S325	1-572-735-11	SWITCH, SLIDE (FOCUS)			
		< FLEXIBLE BOARD >			
W321	1-645-407-11	FP-534 FLEXIBLE BOARD			
W322	1-645-408-11	FP-610 FLEXIBLE BOARD			

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* A-7063-553-A CR-42P BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

< CAPACITOR >

C002	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C003	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C005	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C006	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C007	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C008	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C011	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C012	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C014	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C015	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C016	1-162-918-11	CERAMIC CHIP	18PF	5% 50V	
C017	1-164-237-11	CERAMIC CHIP	16PF	5% 50V	
C018	1-162-919-11	CERAMIC CHIP	22PF	5% 50V	
C019	1-162-917-11	CERAMIC CHIP	15PF	5% 50V	
C020	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C021	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C023	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C024	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C025	1-162-918-11	CERAMIC CHIP	18PF	5% 50V	
C026	1-162-917-11	CERAMIC CHIP	15PF	5% 50V	
C027	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C028	1-162-968-11	CERAMIC CHIP	0.0047uF	10% 50V	
C029	1-135-181-21	TANTALUM CHIP	4.7uF	20% 6.3V	
C031	1-164-315-11	CERAMIC CHIP	470PF	5% 50V	
C032	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C033	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C034	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C035	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C036	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C037	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C039	1-162-918-11	CERAMIC CHIP	18PF	5% 50V	
C041	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C042	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C043	1-162-917-11	CERAMIC CHIP	15PF	5% 50V	
C044	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C045	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C046	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C047	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C048	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C049	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C050	1-162-919-11	CERAMIC CHIP	22PF	5% 50V	
C054	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C055	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C056	1-135-145-11	TANTALUM CHIP	0.47uF	10% 35V	
C059	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C060	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C062	1-135-145-11	TANTALUM CHIP	0.47uF	10% 35V	
C064	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C065	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C066	1-162-923-11	CERAMIC CHIP	47PF	5% 50V	
C067	1-162-926-11	CERAMIC CHIP	82PF	5% 50V	
C068	1-162-926-11	CERAMIC CHIP	82PF	5% 50V	
C070	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C071	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C073	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C074	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C083	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C084	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C085	1-162-924-11	CERAMIC CHIP	56PF	5% 50V	
C088	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V	
C089	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C090	1-162-974-11	CERAMIC CHIP	0.01uF	50V	
C171	1-162-945-11	CERAMIC CHIP	22PF	5% 50V	
C173	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C174	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C175	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C200	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C201	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C202	1-162-949-11	CERAMIC CHIP	47PF	5% 50V	
C203	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C207	1-164-156-11	CERAMIC CHIP	0.1uF	25V	

Ref.No.	Part No.	Description			Remark
R257	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R258	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R259	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R260	1-216-845-11	METAL CHIP	100K	5%	1/16W
R261	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R262	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R263	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R265	1-216-833-11	METAL CHIP	10K	5%	1/16W
R266	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R267	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R268	1-216-845-11	METAL CHIP	100K	5%	1/16W
R269	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R270	1-216-041-00	METAL CHIP	470	5%	1/10W
R271	1-216-041-00	METAL CHIP	470	5%	1/10W
R272	1-216-033-00	METAL CHIP	220	5%	1/10W
R273	1-216-033-00	METAL CHIP	220	5%	1/10W
R275	1-216-295-00	METAL CHIP	0	5%	1/10W
R276	1-216-295-00	METAL CHIP	0	5%	1/10W
R277	1-216-295-00	METAL CHIP	0	5%	1/10W
R278	1-216-295-00	METAL CHIP	0	5%	1/10W
R279	1-216-295-00	METAL CHIP	0	5%	1/10W
R280	1-216-295-00	METAL CHIP	0	5%	1/10W
R281	1-216-295-00	METAL CHIP	0	5%	1/10W
R282	1-216-296-00	METAL CHIP	0	5%	1/8W
R283	1-216-296-00	METAL CHIP	0	5%	1/8W
R284	1-216-295-00	METAL CHIP	0	5%	1/10W
		< VARIABLE RESISTOR >			
RV251	1-238-856-11	RES, ADJ, CERMET 10K			
RV252	1-238-856-11	RES, ADJ, CERMET 10K			
		< SWITCH >			
S251	1-572-284-11	SWITCH, SLIDE (EJECT)			
		< VIBRATOR >			
X251	1-579-467-11	VIBRATOR, CERAMIC (475kHz)			
**********					
*	A-7071-815-A	LI-42P BOARD, COMPLETE			
		**********			
		(Ref. No. 3,000 Series)			
		< BATTERY >			
BAT381	1-550-104-32	HOLDER, BATTERY			
		< CONNECTOR >			
CN381	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			

Ref.No.	Part No.	Description			Remark
		< DIODE >			
D381	8-719-027-65	DIODE MA8075-10			
		< RESISTOR >			
R381	1-216-864-11	METAL CHIP	0	5%	1/16W
**********					
		LS-33 BOARD (Ref. No. 8,000 Series)			
		**********			
		< DIODE >			
D001	8-719-989-52	DIODE GL4600S			
		< DIDOE >			
H001	8-719-987-62	DIODE LT140SAZ			
H002	8-719-987-62	DIODE LT140SAZ			
		< TRANSISTOR >			
Q001	8-729-012-46	TRANSISTOR PT4600FS			
Q002	8-729-012-46	TRANSISTOR PT4600FS			
		< RESISTOR >			
R003	1-216-033-00	METAL CHIP	220	5%	1/10W
R004	1-216-033-00	METAL CHIP	220	5%	1/10W
R010	1-216-033-00	METAL CHIP	220	5%	1/10W
R011	1-216-033-00	METAL CHIP	220	5%	1/10W
		< SWITCH >			
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)			
**********					
*	A-7063-562-A	MJ-53P BOARD, COMPLETE			
		**********			
		(Ref. No. 5.000 Series)			
		< CAPACITOR >			
C431	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C432	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C433	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C434	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C435	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C436	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C437	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C438	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C439	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C440	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C441	1-164-337-11	CERAMIC CHIP	2.2uF		16V

Ref.No.	Part No.	Description			Remark
C442	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C443	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C445	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C447	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C448	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C449	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C452	1-164-346-11	CERAMIC CHIP	1uF		16V
C453	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C454	1-164-346-11	CERAMIC CHIP	1uF		16V
C457	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C458	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
		< CONNECTOR >			
CN431	1-580-789-21	PIN, CONNECTOR (SMD) 6P			
CN432	1-580-057-11	PIN, CONNECTOR 4P			
		< IC >			
IC431	8-759-823-41	IC LA7470M			
		< JACK >			
J431	1-569-810-11	JACK (SMALL TYPE) (MIC)			
J432	1-563-454-11	JACK, MINIATURE (DC OUT)			
		< COIL >			
L431	1-412-979-21	INDUCTOR 1uH			
L432	1-412-979-21	INDUCTOR 1uH			
L433	1-412-979-21	INDUCTOR 1uH			
L434	1-412-979-21	INDUCTOR 1uH			
L435	1-412-979-21	INDUCTOR 1uH			
		< TRANSISTOR >			
Q431	8-729-010-75	TRANSISTOR MSC4116-BC			
		< RESISTOR >			
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W
R432	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R433	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R434	1-216-834-11	METAL CHIP	12K	5%	1/16W
R435	1-216-819-11	METAL CHIP	680	5%	1/16W
R436	1-216-834-11	METAL CHIP	12K	5%	1/16W
R437	1-216-819-11	METAL CHIP	680	5%	1/16W
R438	1-216-842-11	METAL CHIP	56K	5%	1/16W
R439	1-216-842-11	METAL CHIP	56K	5%	1/16W
R440	1-216-836-11	METAL CHIP	18K	5%	1/16W
R441	1-216-836-11	METAL CHIP	18K	5%	1/16W
R442	1-216-833-11	METAL CHIP	10K	5%	1/16W
R443	1-216-833-11	METAL CHIP	10K	5%	1/16W
R444	1-216-833-11	METAL CHIP	10K	5%	1/16W
R445	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref.No.	Part No.	Description			Remark
R448	1-216-864-11	METAL CHIP	0	5%	1/16W
		< SWITCH >			
S431	1-553-977-00	SWITCH, SLIDE (BUILT-IN MIC)			
S432	1-554-088-00	SWITCH, KEY BOARD (REC START/STOP)			
**********					
*	A-7071-810-A	ND-11P BOARD, COMPLETE			
		**********			
		(Ref. No. 6,000 Series)			
		< SWITCH >			
S391	1-572-498-11	SWITCH, SLIDE (ND FILTER)			
**********					
*	A-7063-563-A	RM-63P BOARD, COMPLETE			
		**********			
		(Ref. No. 6,000 Series)			
		< CONNECTOR >			
CN401	1-580-056-21	PIN, CONNECTOR 3P			
		< IC >			
IC401	8-749-923-29	IC RS-20E-T			
		< SWITCH >			
S401	1-692-287-11	SWITCH, PUSH (1 KEY) (REMOTE COMMANDER)			
**********					
*	A-7063-555-A	SA-49 BOARD, COMPLETE			
		**********			
		(Ref. No. 4,000 Series)			
		< CAPACITOR >			
C001	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C002	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C003	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C004	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C005	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C006	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C007	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C008	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C010	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C011	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C013	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C014	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C016	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C017	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C018	1-162-953-11	CERAMIC CHIP	100PF	5%	50V

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Ref.No.	Part No.	Description			Remark
C019	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C021	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C023	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C025	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C026	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C028	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C029	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C032	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C033	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C035	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C036	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C037	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C038	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C039	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C040	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C041	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C042	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C043	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C044	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C045	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C046	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C047	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C048	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C049	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C050	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C051	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C052	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C053	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C054	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C055	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C056	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C057	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C058	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C059	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C060	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C061	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C062	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C063	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C064	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C065	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C066	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C067	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C068	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C069	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C070	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C071	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C072	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C073	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C074	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V

Ref.No.	Part No.	Description			Remark
C075	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C076	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C077	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C078	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C079	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C080	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C082	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C083	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C084	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C085	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C086	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C087	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C120	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C121	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C122	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C123	1-135-213-21	TANTALUM CHIP	3.3uF	20%	25V
C124	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C125	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C126	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C127	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C128	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C129	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C130	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C131	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C132	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C134	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C135	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C136	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C137	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C138	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C139	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C140	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C141	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C143	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C144	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C148	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C149	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C151	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C152	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C153	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C154	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C155	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C156	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C157	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C158	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C161	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C163	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V

Ref.No.	Part No.	Description			Remark
C164	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C165	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C166	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C167	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C168	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C169	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C170	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C171	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C172	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C173	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C174	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C175	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C176	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C177	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C178	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C179	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C180	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C181	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C182	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C185	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C186	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C187	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C188	1-126-395-11	ELECT	22uF	20%	16V
C189	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C190	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C251	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C252	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C253	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C254	1-135-202-21	TANTALUM CHIP	22uF	20%	4V
C255	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C256	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C257	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C259	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C262	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C263	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C264	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C265	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C266	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C267	1-126-209-11	ELECT CHIP	100uF	20%	4V
C268	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C269	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C270	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C271	1-126-209-11	ELECT CHIP	100uF	20%	4V
C272	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C273	1-164-346-11	CERAMIC CHIP	1uF		16V
C274	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V

Ref.No.	Part No.	Description			Remark
C275	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C276	1-164-346-11	CERAMIC CHIP	1uF		16V
C277	1-164-346-11	CERAMIC CHIP	1uF		16V
C278	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C279	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C280	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C281	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C282	1-164-346-11	CERAMIC CHIP	1uF		16V
C283	1-164-346-11	CERAMIC CHIP	1uF		16V
C284	1-164-346-11	CERAMIC CHIP	1uF		16V
C285	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C286	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C287	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C288	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C289	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C290	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C291	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C292	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C293	1-164-346-11	CERAMIC CHIP	1uF		16V
C294	1-164-346-11	CERAMIC CHIP	1uF		16V
C295	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C296	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C298	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C299	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C300	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C301	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C303	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C305	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C308	1-135-163-21	TANTALUM CHIP	47uF	20%	4V
C309	1-135-163-21	TANTALUM CHIP	47uF	20%	4V
C310	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C313	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C314	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C316	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C318	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C319	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C322	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C323	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C324	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C325	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V

Ref.No.	Part No.	Description			Remark
C326	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C327	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C328	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C330	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C331	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C332	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C333	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C334	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C335	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C337	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C338	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C339	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C341	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C342	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C345	1-135-202-21	TANTALUM CHIP	22uF	20%	4V
C346	1-164-346-11	CERAMIC CHIP	1uF		16V
C350	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C351	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C352	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C353	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C354	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C355	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C356	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C357	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C358	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C359	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C360	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C361	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C362	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C363	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C364	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C365	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C366	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C367	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C368	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C369	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C370	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C372	1-164-346-11	CERAMIC CHIP	1uF		16V
C373	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C400	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C402	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C403	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C406	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C407	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C408	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C409	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C411	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C413	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C414	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C415	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C416	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C450	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C452	1-164-346-11	CERAMIC CHIP	1uF		16V
C453	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C454	1-164-346-11	CERAMIC CHIP	1uF		16V
C455	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C457	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C458	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C459	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C460	1-164-346-11	CERAMIC CHIP	1uF		16V
C461	1-164-346-11	CERAMIC CHIP	1uF		16V
C462	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C465	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C466	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C467	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C469	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C471	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C472	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C473	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C474	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C475	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C478	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C479	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C480	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C481	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C482	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C483	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C484	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C486	1-135-216-11	TANTALUM CHIP	10uF	20%	10V

< CONNECTOR >

CN001	1-691-551-11	PIN, CONNECTOR (SMD) 8P
CN121	1-691-928-11	CONNECTOR, BOARD TO BOARD 32P
CN250	1-580-789-21	PIN, CONNECTOR (SMD) 6P
CN450	1-691-928-11	CONNECTOR, BOARD TO BOARD 32P
CN451	1-691-487-21	CONNECTOR, FFC/FPC 8P
CN452	1-569-775-21	PIN, CONNECTOR 5P

< TRIMMER >

CT400	1-141-424-11	CAP, ADJ

< DIODE >

D002	8-719-404-35	DIODE	MA141WK
D004	8-719-404-35	DIODE	MA141WK
D005	8-719-404-35	DIODE	MA141WK
D006	8-719-404-46	DIODE	MA111O
D007	8-719-404-46	DIODE	MA111O
D120	8-719-404-35	DIODE	MA141WK
D121	8-719-404-46	DIODE	MA111O
D250	8-719-027-65	DIODE	MA8075-10
D251	8-719-027-65	DIODE	MA8075-10
D350	8-719-404-46	DIODE	MA111O
D400	8-719-949-46	DIODE	1T32
D401	8-719-800-76	DIODE	1SS226
⚠D450	8-719-421-27	DIODE	MA728

< FILTER >

FL250	1-236-838-21	FILTER, BAND PASS
FL251	1-236-837-21	FILTER, BAND PASS
FL401	1-406-452-11	COIL, OSC

< IC >

IC001	8-759-064-36	IC	MB88346BPFV
IC002	8-759-300-71	IC	HD14053BFP
IC003	8-752-033-00	IC	CXA1234AR
IC004	8-759-148-49	IC	CXA1443N
IC120	8-752-841-25	IC	CXP80624-448Q
IC121	8-759-990-55	IC	CXA8006M
IC123	8-759-039-01	IC	MPC1720M
IC124	8-759-059-42	IC	CXA1481AR
IC250	8-759-823-19	IC	CXA1488R
IC251	8-759-823-21	IC	CXA1536Q
IC252	8-759-008-67	IC	MC14066BF
IC253	8-759-823-19	IC	CXA1488R
IC350	8-752-010-20	IC	CX20102
IC351	8-759-061-72	IC	CXD2120R
IC400	8-759-073-98	IC	uPD6453GT-621
IC401	8-759-970-80	IC	MB673198U
IC402	8-759-082-61	IC	TC4W53FU
⚠IC451	8-759-056-84	IC	S-8420AF
IC452	8-759-155-73	IC	MB89093PFV-G-118-BND
IC454	8-759-999-02	IC	TL1596CDB
IC455	8-759-044-78	IC	AK6420F
IC456	8-759-064-36	IC	MB88346BPFV

< COIL >

L001	1-414-078-11	INDUCTOR 10uH
L002	1-410-381-11	INDUCTOR CHIP 10uH
L003	1-410-381-11	INDUCTOR CHIP 10uH
L005	1-410-393-11	INDUCTOR CHIP 100uH
L006	1-410-384-31	INDUCTOR CHIP 18uH
L007	1-410-384-31	INDUCTOR CHIP 18uH
L008	1-412-066-21	INDUCTOR CHIP 220uH
L009	1-412-058-11	INDUCTOR CHIP 10uH
L010	1-410-381-11	INDUCTOR CHIP 10uH
L011	1-410-389-31	INDUCTOR CHIP 47uH
L012	1-410-393-11	INDUCTOR CHIP 100uH
L013	1-410-379-31	INDUCTOR CHIP 6.8uH
L014	1-410-385-11	INDUCTOR CHIP 22uH
L015	1-410-658-31	INDUCTOR CHIP 220uH
L016	1-410-381-11	INDUCTOR CHIP 10uH
L120	1-410-381-11	INDUCTOR CHIP 10uH
L121	1-410-377-31	INDUCTOR CHIP 4.7uH
L123	1-412-951-11	INDUCTOR 10uH
L124	1-412-951-11	INDUCTOR 10uH
L350	1-414-118-11	INDUCTOR 4.7uH
L351	1-410-658-31	INDUCTOR CHIP 220uH
L352	1-414-118-11	INDUCTOR 4.7uH
L400	1-412-282-41	INDUCTOR 470uH
L401	1-414-078-11	INDUCTOR 10uH
L450	1-412-939-11	INDUCTOR 1uH
L451	1-412-959-11	INDUCTOR 47uH
L452	1-412-959-11	INDUCTOR 47uH

< IC LINK >

⚠PS120	1-576-123-21	LINK, IC (CCP2E20 0.8A)
⚠PS121	1-576-123-21	LINK, IC (CCP2E20 0.8A)

< TRANSISTOR >

Q001	8-729-403-07	TRANSISTOR	XN1213
Q002	8-729-403-06	TRANSISTOR	XN1113
Q003	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q004	8-729-010-75	TRANSISTOR	MSC4116-BC
Q005	8-729-402-42	TRANSISTOR	UN5213
Q007	8-729-010-75	TRANSISTOR	MSC4116-BC
Q009	8-729-402-42	TRANSISTOR	UN5213
Q010	8-729-421-26	TRANSISTOR	UN5216QRS
Q011	8-729-402-42	TRANSISTOR	UN5213
Q013	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q016	8-729-010-75	TRANSISTOR	MSC4116-BC
Q017	8-729-402-42	TRANSISTOR	UN5213
Q019	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q021	8-729-402-42	TRANSISTOR	UN5213
Q022	8-729-010-75	TRANSISTOR	MSC4116-BC
Q023	8-729-010-75	TRANSISTOR	MSC4116-BC
Q024	8-729-010-75	TRANSISTOR	MSC4116-BC
Q025	8-729-010-75	TRANSISTOR	MSC4116-BC
Q026	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q027	8-729-117-72	TRANSISTOR	2SC4178
Q028	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q029	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q030	8-729-117-72	TRANSISTOR	2SC4178
Q120	8-729-015-76	TRANSISTOR	UN5211
Q121	8-729-403-27	TRANSISTOR	XN4401

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
Q122	8-729-010-75	TRANSISTOR MSC4116-BC	
Q125	8-729-822-84	TRANSISTOR 2SB1202FAST	
Q128	8-729-402-81	TRANSISTOR XN4501	
Q129	8-729-402-81	TRANSISTOR XN4501	
Q130	8-729-403-42	TRANSISTOR XN1401	
Q250	8-729-402-42	TRANSISTOR UN5213	
Q251	8-729-402-81	TRANSISTOR XN4501	
Q252	8-729-402-42	TRANSISTOR UN5213	
Q253	8-729-402-81	TRANSISTOR XN4501	
Q254	8-729-402-81	TRANSISTOR XN4501	
Q255	8-729-010-60	TRANSISTOR MSA1586-BC	
Q350	8-729-010-75	TRANSISTOR MSC4116-BC	
Q351	8-729-010-75	TRANSISTOR MSC4116-BC	
Q352	8-729-010-75	TRANSISTOR MSC4116-BC	
Q353	8-729-403-35	TRANSISTOR UN5113	
Q402	8-729-010-75	TRANSISTOR MSC4116-BC	
Q450	8-729-403-10	TRANSISTOR XN6215	
Q451	8-729-402-42	TRANSISTOR UN5213	
Q452	8-729-403-35	TRANSISTOR UN5113	
		< RESISTOR >	
R001	1-216-864-11	METAL CHIP 0 5% 1/16W	
R003	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R004	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R005	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R010	1-216-820-11	METAL CHIP 820 5% 1/16W	
R011	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R012	1-216-864-11	METAL CHIP 0 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R017	1-216-820-11	METAL CHIP 820 5% 1/16W	
R019	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R020	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R021	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R022	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R023	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R024	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R025	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R026	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R027	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R032	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R034	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R035	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R036	1-216-809-11	METAL CHIP 100 5% 1/16W	
R037	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R038	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R039	1-216-841-11	METAL CHIP 47K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R041	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R046	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R047	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R050	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R051	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R052	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R053	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R054	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R055	1-216-809-11	METAL CHIP 100 5% 1/16W	
R056	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R057	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R058	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R059	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R060	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R061	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R062	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R063	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R064	1-216-809-11	METAL CHIP 100 5% 1/16W	
R065	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R066	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R067	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R068	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R069	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R070	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R071	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R072	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R073	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R074	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R075	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R076	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R077	1-216-797-11	METAL CHIP 10 5% 1/16W	
R078	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R079	1-216-813-11	METAL CHIP 220 5% 1/16W	
R080	1-216-814-11	METAL CHIP 270 5% 1/16W	
R081	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R082	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R083	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R084	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R085	1-216-807-11	METAL CHIP 68 5% 1/16W	
R086	1-216-812-11	METAL CHIP 180 5% 1/16W	
R087	1-216-805-11	METAL CHIP 47 5% 1/16W	
R088	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R089	1-216-812-11	METAL CHIP 180 5% 1/16W	
R090	1-216-818-11	METAL CHIP 560 5% 1/16W	
R091	1-216-804-11	METAL CHIP 39 5% 1/16W	
R092	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R093	1-216-797-11	METAL CHIP 10 5% 1/16W	
R094	1-216-864-11	METAL CHIP 0 5% 1/16W	
R095	1-216-864-11	METAL CHIP 0 5% 1/16W	
R096	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R120	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R121	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R122	1-216-864-11	METAL CHIP 0 5% 1/16W	
R123	1-216-864-11	METAL CHIP 0 5% 1/16W	
R124	1-216-809-11	METAL CHIP 100 5% 1/16W	
R125	1-216-809-11	METAL CHIP 100 5% 1/16W	
R126	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R127	1-216-864-11	METAL CHIP 0 5% 1/16W	
R128	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R129	1-216-174-00	METAL CHIP 100 5% 1/8W	
R130	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R131	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R132	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R133	1-216-809-11	METAL CHIP 100 5% 1/16W	
R135	1-216-809-11	METAL CHIP 100 5% 1/16W	
R136	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R137	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R138	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R139	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R140	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R141	1-216-864-11	METAL CHIP 0 5% 1/16W	
R142	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R144	1-216-809-11	METAL CHIP 100 5% 1/16W	
R147	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R148	1-216-816-11	METAL CHIP 390 5% 1/16W	
R149	1-217-671-11	METAL CHIP 1 5% 1/10W	
R150	1-217-671-11	METAL CHIP 1 5% 1/10W	
R151	1-217-671-11	METAL CHIP 1 5% 1/10W	
R152	1-217-671-11	METAL CHIP 1 5% 1/10W	
R154	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R155	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R158	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R159	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R160	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R161	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R162	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R163	1-216-864-11	METAL CHIP 0 5% 1/16W	
R164	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R165	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R166	1-216-864-11	METAL CHIP 0 5% 1/16W	
R167	1-216-864-11	METAL CHIP 0 5% 1/16W	
R168	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R169	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R170	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R171	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R172	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R173	1-216-864-11	METAL CHIP 0 5% 1/16W	
R174	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R175	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R176	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R177	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R179	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R180	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R181	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R182	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R183	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R187	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R189	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R197	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R198	1-216-864-11	METAL CHIP 0 5% 1/16W	
R200	1-216-864-11	METAL CHIP 0 5% 1/16W	
R201	1-216-864-11	METAL CHIP 0 5% 1/16W	
R203	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R204	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R205	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R207	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R208	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R209	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R210	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R211	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R212	1-216-817-11	METAL CHIP 470 5% 1/16W	
R213	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R214	1-216-817-11	METAL CHIP 470 5% 1/16W	
R215	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R216	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R217	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R218	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R219	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R220	1-216-817-11	METAL CHIP 470 5% 1/16W	
R221	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R229	1-216-864-11	METAL CHIP 0 5% 1/16W	
R230	1-216-864-11	METAL CHIP 0 5% 1/16W	
R231	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R232	1-216-864-11	METAL CHIP 0 5% 1/16W	
R233	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R234	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R235	1-216-809-11	METAL CHIP 100 5% 1/16W	
R236	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R237	1-216-815-11	METAL CHIP 330 5% 1/16W	
R239	1-216-864-11	METAL CHIP 0 5% 1/16W	
R240	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R242	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R243	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R246	1-216-864-11	METAL CHIP 0 5% 1/16W	
R247	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R248	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R249	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R250	1-216-659-11	METAL CHIP 2.2K 0.5% 1/10W	
R251	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R252	1-216-859-11	METAL CHIP 1.5M 5% 1/16W	

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Ref. No.	Part No.	Description				Remark
R253	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R255	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R256	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R257	1-216-817-11	METAL CHIP	470	5%	1/16W	
R258	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R260	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R261	1-216-679-11	METAL CHIP	15K	0.5%	1/10W	
R263	1-216-679-11	METAL CHIP	15K	0.5%	1/10W	
R264	1-216-804-11	METAL CHIP	39	5%	1/16W	
R265	1-218-720-11	METAL CHIP	15K	0.50%	1/16W	
R266	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R267	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R269	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R270	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R271	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R273	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R274	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R275	1-216-810-11	METAL CHIP	120	5%	1/16W	
R276	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R277	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R278	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R279	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R280	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R282	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R283	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R284	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R285	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R286	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R287	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R288	1-216-859-11	METAL CHIP	1.5M	5%	1/16W	
R289	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R292	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R293	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R294	1-216-802-11	METAL CHIP	27	5%	1/16W	
R295	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R296	1-216-804-11	METAL CHIP	39	5%	1/16W	
R297	1-218-720-11	METAL CHIP	15K	0.50%	1/16W	
R298	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R299	1-216-864-11	METAL CHIP	0	5%	1/16W	
R300	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R301	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R302	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R303	1-216-815-11	METAL CHIP	330	5%	1/16W	
R304	1-216-819-11	METAL CHIP	680	5%	1/16W	
R305	1-216-813-11	METAL CHIP	220	5%	1/16W	
R306	1-216-817-11	METAL CHIP	470	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R310	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R312	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R313	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R314	1-216-810-11	METAL CHIP	120	5%	1/16W	
R321	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R334	1-216-864-11	METAL CHIP	0	5%	1/16W	
R337	1-216-295-00	METAL CHIP	0	5%	1/10W	
R350	1-216-819-11	METAL CHIP	680	5%	1/16W	
R351	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R352	1-216-819-11	METAL CHIP	680	5%	1/16W	
R353	1-216-815-11	METAL CHIP	330	5%	1/16W	
R354	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R355	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R356	1-216-817-11	METAL CHIP	470	5%	1/16W	
R357	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R358	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R359	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R360	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R361	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R362	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R363	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R364	1-216-818-11	METAL CHIP	560	5%	1/16W	
R365	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R367	1-216-819-11	METAL CHIP	680	5%	1/16W	
R368	1-216-811-11	METAL CHIP	150	5%	1/16W	
R369	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R370	1-216-819-11	METAL CHIP	680	5%	1/16W	
R371	1-216-820-11	METAL CHIP	820	5%	1/16W	
R372	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R374	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R375	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R376	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-819-11	METAL CHIP	680	5%	1/16W	
R381	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R383	1-216-810-11	METAL CHIP	120	5%	1/16W	
R384	1-216-810-11	METAL CHIP	120	5%	1/16W	
R385	1-216-295-00	METAL CHIP	0	5%	1/10W	
R386	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R387	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R400	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R401	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R402	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R403	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R404	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R406	1-216-864-11	METAL CHIP	0	5%	1/16W	
R409	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R410	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R412	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R413	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R415	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R416	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R417	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R418	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R421	1-216-864-11	METAL CHIP	0	5%	1/16W	
R422	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R426	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R432	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R450	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R451	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R452	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R455	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R458	1-216-864-11	METAL CHIP	0	5%	1/16W	
R459	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R460	1-216-817-11	METAL CHIP	470	5%	1/16W	
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R470	1-216-864-11	METAL CHIP	0	5%	1/16W	
R471	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R472	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R473	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R474	1-216-813-11	METAL CHIP	220	5%	1/16W	
R475	1-216-817-11	METAL CHIP	470	5%	1/16W	
R476	1-216-817-11	METAL CHIP	470	5%	1/16W	
R477	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R478	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R481	1-216-813-11	METAL CHIP	220	5%	1/16W	
R482	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R484	1-216-813-11	METAL CHIP	220	5%	1/16W	
R485	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R488	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R489	1-216-864-11	METAL CHIP	0	5%	1/16W	
R499	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
RS00	1-216-821-11	METAL CHIP	1K	5%	1/16W	
RS01	1-216-845-11	METAL CHIP	100K	5%	1/16W	
RS02	1-216-864-11	METAL CHIP	0	5%	1/16W	
RS03	1-216-833-11	METAL CHIP	10K	5%	1/16W	
RS04	1-216-821-11	METAL CHIP	1K	5%	1/16W	
RS05	1-216-821-11	METAL CHIP	1K	5%	1/16W	
RS06	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R507	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R508	1-216-661-11	METAL CHIP	2.7K	0.5%	1/10W	
R513	1-216-813-11	METAL CHIP	220	5%	1/16W	
R514	1-216-813-11	METAL CHIP	220	5%	1/16W	
R515	1-216-813-11	METAL CHIP	220	5%	1/16W	
R516	1-216-813-11	METAL CHIP	220	5%	1/16W	
R517	1-216-813-11	METAL CHIP	220	5%	1/16W	
R518	1-216-813-11	METAL CHIP	220	5%	1/16W	
R519	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R520	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R521	1-216-809-11	METAL CHIP	100	5%	1/16W	
R524	1-216-809-11	METAL CHIP	100	5%	1/16W	
R525	1-216-809-11	METAL CHIP	100	5%	1/16W	
R530	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R531	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R532	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R533	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R534	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R535	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R536	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R537	1-216-809-11	METAL CHIP	100	5%	1/16W	

< NETWORK, RES >

RB120	1-236-412-11	NETWORK, RES 1.0K
RB121	1-236-412-11	NETWORK, RES 1.0K
RB122	1-236-424-11	NETWORK, RES 10K
RB123	1-236-412-11	NETWORK, RES 1.0K
RB125	1-236-436-11	NETWORK, RES 100K
RB450	1-236-424-11	NETWORK, RES 10K
RB451	1-236-424-11	NETWORK, RES 10K
RB452	1-236-424-11	NETWORK, RES 10K
RB453	1-236-424-11	NETWORK, RES 10K
RB454	1-236-436-11	NETWORK, RES 100K
RB455	1-236-436-11	NETWORK, RES 100K
RB456	1-236-436-11	NETWORK, RES 100K
RB458	1-236-404-11	NETWORK, RES 220
RB459	1-236-424-11	NETWORK, RES 10K
RB460	1-236-971-11	NETWORK, RES 0
RB462	1-236-971-11	NETWORK, RES 0
RB464	1-236-971-11	NETWORK, RES 0
RB468	1-236-404-11	NETWORK, RES 220

< VARIABLE RESISTOR >

RV001	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K
RV002	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K
RV003	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K
RV351	1-241-476-11	RES, ADJ, CERMET 2.2K

< THERMISTOR >

TH120	1-809-354-11	THERMISTOR, NTC (2125)

< FLEXIBLE BOARD >

W001	1-645-402-11	FP-522 FLEXIBLE BOARD

< VIBRATOR >

X120	1-579-368-31	VIBRATOR, CRYSTAL (11.71MHz)
X350	1-579-558-11	VIBRATOR, CRYSTAL (11.50MHz)
X450	1-579-550-11	VIBRATOR, CRYSTAL (32.768kHz)
X451	1-579-369-21	VIBRATOR (10MHz)

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Ref.No.	Part No.	Description			Remark
*	A-7071-812-A	SW-203P BOARD, COMPLETE			
		**********			
		(Ref. No. 6,000 Series)			
		< CAPACITOR >			
C361	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
		< CONNECTOR >			
CN361	1-691-534-11	CONNECTOR, BOARD TO BOARD 20P			
* CN362	1-566-758-11	PIN, CONNECTOR (PC BOARD) 3P			
CN363	1-566-521-11	CONNECTOR, FPC (ZIF) 5P			
CN364	1-691-485-21	CONNECTOR, FFC/FPC 6P			
CN365	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P			
CN366	1-691-483-21	CONNECTOR, FFC/FPC 4P			
		< DIODE >			
D361	8-719-027-65	DIODE MA8075-10			
D362	8-719-027-65	DIODE MA8075-10			
D363	8-719-027-65	DIODE MA8075-10			
D364	8-719-027-65	DIODE MA8075-10			
D365	8-719-027-65	DIODE MA8075-10			
D367	8-719-027-65	DIODE MA8075-10			
		< JACK >			
J361	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)			
J362	1-507-929-11	JACK (PHONES)			
		< COIL >			
L361	1-410-369-11	INDUCTOR CHIP 1uH			
L362	1-410-369-11	INDUCTOR CHIP 1uH			
L363	1-410-369-11	INDUCTOR CHIP 1uH			
L364	1-410-369-11	INDUCTOR CHIP 1uH			
L365	1-410-369-11	INDUCTOR CHIP 1uH			
L366	1-410-369-11	INDUCTOR CHIP 1uH			
		< RESISTOR >			
R361	1-216-818-11	METAL CHIP	560	5%	1/16W
R362	1-216-818-11	METAL CHIP	560	5%	1/16W
R363	1-216-805-11	METAL CHIP	47	5%	1/16W
R365	1-216-864-11	METAL CHIP	0	5%	1/16W
R368	1-216-864-11	METAL CHIP	0	5%	1/16W
R369	1-216-864-11	METAL CHIP	0	5%	1/16W
R370	1-216-845-11	METAL CHIP	100K	5%	1/16W
		< SWITCH >			
S361	1-571-838-11	SWITCH, TACTIL (START/STOP)			
S362	1-572-497-11	SWITCH, SLIDE (STANDBY)			

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Ref.No.	Part No.	Description			Remark
*	A-7071-813-A	TB-23P BOARD, COMPLETE			
		**********			
		(Ref. No. 6,000 Series)			
*	3-744-736-01	HOLDER, TALLY			
		< DIODE >			
D411	8-719-812-41	LED TLR124			

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*	A-7063-557-A	VC-116P BOARD, COMPLETE			
		**********			
		(Ref. No. 2,000 Series)			
		< CAPACITOR >			
C602	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C604	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C606	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C612	1-164-346-11	CERAMIC CHIP	1uF		16V
C613	1-164-346-11	CERAMIC CHIP	1uF		16V
C614	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C616	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C617	1-135-211-11	TANTALUM CHIP	6.8uF	20%	6.3V
C619	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C620	1-164-346-11	CERAMIC CHIP	1uF		16V
C621	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C624	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C625	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C626	1-164-346-11	CERAMIC CHIP	1uF		16V
C627	1-164-346-11	CERAMIC CHIP	1uF		16V
C628	1-164-346-11	CERAMIC CHIP	1uF		16V
C629	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C630	1-164-346-11	CERAMIC CHIP	1uF		16V
C631	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C632	1-164-346-11	CERAMIC CHIP	1uF		16V
C633	1-164-346-11	CERAMIC CHIP	1uF		16V
C634	1-164-346-11	CERAMIC CHIP	1uF		16V
C635	1-164-346-11	CERAMIC CHIP	1uF		16V
C636	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C637	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C638	1-164-346-11	CERAMIC CHIP	1uF		16V
C639	1-164-346-11	CERAMIC CHIP	1uF		16V
C640	1-164-346-11	CERAMIC CHIP	1uF		16V
C641	1-164-346-11	CERAMIC CHIP	1uF		16V
C642	1-164-346-11	CERAMIC CHIP	1uF		16V
C643	1-124-472-11	ELECT	470uF	20%	10V
C644	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C645	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C646	1-164-360-11	CERAMIC CHIP	0.1uF		16V

Ref.No.	Part No.	Description			Remark
C647	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C648	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C649	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C650	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C651	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C652	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C653	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C654	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C655	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C656	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C657	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C658	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C659	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C660	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C661	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C662	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C664	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C665	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C666	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C667	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C668	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C700	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C701	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C702	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C703	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C704	1-162-939-11	CERAMIC CHIP	8PF	0.5PF	50V
C705	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C706	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C751	1-164-346-11	CERAMIC CHIP	1uF		16V
C752	1-164-346-11	CERAMIC CHIP	1uF		16V
C753	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C754	1-164-346-11	CERAMIC CHIP	1uF		16V
C756	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C757	1-164-346-11	CERAMIC CHIP	1uF		16V
C758	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C759	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C760	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C761	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C762	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C763	1-164-346-11	CERAMIC CHIP	1uF		16V
C765	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C766	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C767	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C769	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C771	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C775	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C801	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C802	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C805	1-164-360-11	CERAMIC CHIP	0.1uF		16V

Ref.No.	Part No.	Description			Remark
C806	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C807	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C808	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C809	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C812	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C813	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C851	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C852	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C853	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C855	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C856	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C857	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C858	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C859	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C861	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C862	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
		< CONNECTOR >			
CN601	1-580-056-21	PIN, CONNECTOR 3P			
CN602	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P			
CN603	1-691-528-11	CONNECTOR, BOARD TO BOARD 28P			
* CN604	1-580-055-21	PIN, CONNECTOR 2P			
CN751	1-691-485-21	CONNECTOR, FFC/FPC 6P			
CN801	1-691-492-21	CONNECTOR, FFC/FPC 13P			
CN802	1-573-929-11	CONNECTOR, FFC/FPC (ZIF) 20P			
CN803	1-573-926-11	CONNECTOR, FFC/FPC (ZIF) 17P			
CN804	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
CN851	1-691-487-21	CONNECTOR, FFC/FPC 8P			
		< DIODE >			
D601	8-719-404-46	DIODE MA110			
D602	8-719-404-46	DIODE MA110			
D801	8-719-404-46	DIODE MA110			
		< FILTER >			
FL601	1-236-208-11	FILTER, LOW PASS			
FL602	1-236-208-11	FILTER, LOW PASS			
FL603	1-236-208-11	FILTER, LOW PASS			
FL606	1-236-892-21	FILTER, LOW PASS			
FL751	1-415-730-21	DELAY LINE, LC (100NS)			
FL752	1-415-730-21	DELAY LINE, LC (100NS)			
FL753	1-415-905-12	DELAY LINE, LC (210NS)			
		< IC >			
IC601	8-759-059-00	IC uPC2372AGK			
IC602	8-759-635-27	IC M62352GP			
IC603	8-752-332-69	IC CXL5504M			
IC604	8-759-059-03	IC LM324PW			
IC605	8-752-035-49	IC CXA1270N			

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Ref.No.	Part No.	Description	Remark
IC606	8-759-058-41	IC NJM3416V	
IC607	8-759-058-57	IC TC7S04FU	
IC608	8-759-058-61	IC TC7S08FU	
IC609	8-759-082-60	IC TC7S66FU	
IC700	8-759-082-61	IC TC4W53FU	
IC751	8-752-056-59	IC CXA1592R	
IC752	8-759-635-27	IC M62352GP	
IC753	8-759-082-60	IC TC7S66FU	
IC801	8-759-168-97	IC SC406813FUMC68HC11M2	
IC804	8-759-085-50	IC BR9041ARF	
IC851	8-759-066-61	IC TC4053BFS	
IC852	8-759-059-03	IC LM324PW	
IC853	8-759-058-41	IC NJM3416V	
IC854	8-759-635-27	IC M62352GP	
		< COIL >	
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L602	1-412-058-11	INDUCTOR CHIP 10uH	
L801	1-412-006-31	INDUCTOR CHIP 10uH	
L802	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q601	8-729-010-75	TRANSISTOR MSC4116-BC	
Q602	8-729-010-75	TRANSISTOR MSC4116-BC	
Q603	8-729-010-75	TRANSISTOR MSC4116-BC	
Q604	8-729-010-75	TRANSISTOR MSC4116-BC	
Q605	8-729-010-75	TRANSISTOR MSC4116-BC	
Q606	8-729-010-75	TRANSISTOR MSC4116-BC	
Q607	8-729-402-84	TRANSISTOR XN4601	
Q617	8-729-402-84	TRANSISTOR XN4601	
Q619	8-729-402-84	TRANSISTOR XN4601	
Q622	8-729-402-84	TRANSISTOR XN4601	
Q626	8-729-402-45	TRANSISTOR UN5212	
Q627	8-729-010-75	TRANSISTOR MSC4116-BC	
Q628	8-729-010-60	TRANSISTOR MSA1586-BC	
Q629	8-729-010-75	TRANSISTOR MSC4116-BC	
Q630	8-729-010-75	TRANSISTOR MSC4116-BC	
Q641	8-729-010-75	TRANSISTOR MSC4116-BC	
Q642	8-729-010-75	TRANSISTOR MSC4116-BC	
Q643	8-729-010-75	TRANSISTOR MSC4116-BC	
Q700	8-729-010-75	TRANSISTOR MSC4116-BC	
Q701	8-729-010-75	TRANSISTOR MSC4116-BC	
Q702	8-729-010-75	TRANSISTOR MSC4116-BC	
Q703	8-729-402-81	TRANSISTOR XN4501	
Q705	8-729-010-75	TRANSISTOR MSC4116-BC	
Q706	8-729-402-84	TRANSISTOR XN4601	
Q707	8-729-010-75	TRANSISTOR MSC4116-BC	
Q751	8-729-402-84	TRANSISTOR XN4601	
Q752	8-729-402-84	TRANSISTOR XN4601	
Q753	8-729-010-60	TRANSISTOR MSA1586-BC	

Ref.No.	Part No.	Description	Remark
Q754	8-729-010-75	TRANSISTOR MSC4116-BC	
Q755	8-729-010-75	TRANSISTOR MSC4116-BC	
Q801	8-729-010-75	TRANSISTOR MSC4116-BC	
Q802	8-729-010-75	TRANSISTOR MSC4116-BC	
Q803	8-729-010-75	TRANSISTOR MSC4116-BC	
Q851	8-729-010-75	TRANSISTOR MSC4116-BC	
		< RESISTOR >	
R602	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R603	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R604	1-218-704-11	METAL CHIP 3.3K 0.50% 1/16W	
R605	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R606	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R607	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R608	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R609	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R610	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R612	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R614	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R615	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R616	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R617	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R618	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R619	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R620	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R622	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R623	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R624	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R625	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R626	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R627	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R628	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R629	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R630	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R631	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R639	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R640	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R641	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R642	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R643	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R644	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R645	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R646	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R647	1-216-818-11	METAL CHIP 560 5% 1/16W	
R648	1-216-864-11	METAL CHIP 0 5% 1/16W	
R649	1-216-864-11	METAL CHIP 0 5% 1/16W	
R651	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R652	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R654	1-218-725-11	METAL CHIP 24K 0.50% 1/16W	
R655	1-216-841-11	METAL CHIP 47K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R656	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R657	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R658	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R659	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R660	1-216-864-11	METAL CHIP 0 5% 1/16W	
R661	1-218-734-11	METAL CHIP 56K 0.50% 1/16W	
R662	1-218-725-11	METAL CHIP 24K 0.50% 1/16W	
R663	1-218-734-11	METAL CHIP 56K 0.50% 1/16W	
R664	1-218-734-11	METAL CHIP 56K 0.50% 1/16W	
R665	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R667	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R669	1-216-796-11	METAL CHIP 8.2 5% 1/16W	
R673	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R677	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R678	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R679	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R680	1-216-820-11	METAL CHIP 820 5% 1/16W	
R681	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R683	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R697	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R698	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R699	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R702	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-218-345-11	METAL CHIP 9.1K 0.50% 1/16W	
R705	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R706	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R707	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R713	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R714	1-216-818-11	METAL CHIP 560 5% 1/16W	
R715	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R716	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R717	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R718	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R719	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R720	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R721	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R722	1-216-864-11	METAL CHIP 0 5% 1/16W	
R723	1-216-817-11	METAL CHIP 470 5% 1/16W	
R724	1-216-802-11	METAL CHIP 27 5% 1/16W	
R725	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R726	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R727	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R728	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R729	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R730	1-216-820-11	METAL CHIP 820 5% 1/16W	
R731	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R732	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R733	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R734	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R735	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R740	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R741	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R742	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R743	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R744	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R745	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R746	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R747	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R748	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R749	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R750	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R751	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R752	1-216-864-11	METAL CHIP 0 5% 1/16W	
R753	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R756	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R757	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R760	1-216-819-11	METAL CHIP 680 5% 1/16W	
R762	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R763	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R764	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R765	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R766	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R767	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R768	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R769	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R771	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R772	1-216-864-11	METAL CHIP 0 5% 1/16W	
R773	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R774	1-216-864-11	METAL CHIP 0 5% 1/16W	
R777	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R780	1-216-864-11	METAL CHIP 0 5% 1/16W	
R782	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R784	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R785	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R787	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R790	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R791	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R801	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R802	1-216-864-11	METAL CHIP 0 5% 1/16W	
R803	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R804	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R805	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R806	1-216-864-11	METAL CHIP 0 5% 1/16W	
R807	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R808	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R809	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R810	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R811	1-216-864-11	METAL CHIP 0 5% 1/16W	
R812	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R813	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R815	1-216-864-11	METAL CHIP	0	5% 1/16W	
R817	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R818	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R819	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R820	1-216-836-11	METAL CHIP	18K	5% 1/16W	
R822	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R824	1-216-829-11	METAL CHIP	4.7K	5% 1/16W	
R825	1-216-829-11	METAL CHIP	4.7K	5% 1/16W	
R827	1-216-864-11	METAL CHIP	0	5% 1/16W	
R836	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R839	1-216-864-11	METAL CHIP	0	5% 1/16W	
R840	1-216-864-11	METAL CHIP	0	5% 1/16W	
R851	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R852	1-218-752-11	METAL CHIP	330K	0.50% 1/16W	
R853	1-216-849-11	METAL CHIP	220K	5% 1/16W	
R854	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R855	1-216-844-11	METAL CHIP	82K	5% 1/16W	
R856	1-216-847-11	METAL CHIP	150K	5% 1/16W	
R857	1-216-824-11	METAL CHIP	1.8K	5% 1/16W	
R858	1-216-848-11	METAL CHIP	180K	5% 1/16W	
R859	1-216-820-11	METAL CHIP	820	5% 1/16W	
R861	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R862	1-216-837-11	METAL CHIP	22K	5% 1/16W	
R863	1-216-841-11	METAL CHIP	47K	5% 1/16W	
R864	1-216-843-11	METAL CHIP	68K	5% 1/16W	
R865	1-216-830-11	METAL CHIP	5.6K	5% 1/16W	
R866	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R867	1-216-824-11	METAL CHIP	1.8K	5% 1/16W	
R868	1-216-857-11	METAL CHIP	1M	5% 1/16W	
R869	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R870	1-218-883-11	METAL CHIP	33K	0.50% 1/16W	
R871	1-218-736-11	METAL CHIP	68K	0.50% 1/16W	
R872	1-216-837-11	METAL CHIP	22K	5% 1/16W	
R873	1-216-855-11	METAL CHIP	680K	5% 1/16W	
R890	1-216-864-11	METAL CHIP	0	5% 1/16W	
R891	1-216-809-11	METAL CHIP	100	5% 1/16W	
R892	1-216-809-11	METAL CHIP	100	5% 1/16W	
R893	1-216-809-11	METAL CHIP	100	5% 1/16W	
R894	1-216-864-11	METAL CHIP	0	5% 1/16W	
R895	1-216-864-11	METAL CHIP	0	5% 1/16W	
R896	1-216-864-11	METAL CHIP	0	5% 1/16W	
R898	1-216-864-11	METAL CHIP	0	5% 1/16W	
R899	1-216-864-11	METAL CHIP	0	5% 1/16W	
		< VARIABLE RESISTOR >			
RV601	1-230-873-11	RES, ADJ, METAL 47K			
RV602	1-230-873-11	RES, ADJ, METAL 47K			

Ref. No.	Part No.	Description			Remark
		< VIBRATOR >			
X801	1-579-669-11	VIBRATOR, LITIUM NIOBATE (16MHz)			
**********					
*	A-7063-558-A	VC-119P BOARD, COMPLETE			
		**********			
		(Ref. No. 2,000 Series)			
		< CAPACITOR >			
C902	1-135-201-11	TANTALUM CHIP	10uF	20% 4V	
C903	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C905	1-135-201-11	TANTALUM CHIP	10uF	20% 4V	
C906	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C908	1-135-201-11	TANTALUM CHIP	10uF	20% 4V	
C909	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C910	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C911	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V	
C912	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V	
C913	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V	
C914	1-135-072-21	TANTALUM CHIP	0.22uF	10% 35V	
C915	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C917	1-162-954-11	CERAMIC CHIP	120PF	5% 50V	
C918	1-135-259-11	TANTALUM CHIP	10uF	20% 6.3V	
C920	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C921	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C922	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C923	1-164-005-11	CERAMIC CHIP	0.47uF	25V	
C924	1-164-005-11	CERAMIC CHIP	0.47uF	25V	
C925	1-164-005-11	CERAMIC CHIP	0.47uF	25V	
C926	1-164-005-11	CERAMIC CHIP	0.47uF	25V	
C927	1-164-005-11	CERAMIC CHIP	0.47uF	25V	
C928	1-135-161-21	TANTALUM CHIP	22uF	10% 10V	
C929	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	
C930	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C931	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C932	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C933	1-164-360-11	CERAMIC CHIP	0.1uF	16V	
C934	1-135-162-21	TANTALUM CHIP	33uF	20% 6.3V	
C935	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V	
C936	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
		< CONNECTOR >			
CN901	1-691-518-11	CONNECTOR, BOARD TO BOARD 28P			
		< IC >			
IC901	8-759-635-27	IC M62352GP			
IC902	8-752-034-21	IC CXA1339R			
IC903	8-759-066-57	IC TC74HC4066AFS			
IC904	8-759-075-68	IC TC4066BFS			

Ref. No.	Part No.	Description			Remark
IC905	8-759-075-68	IC TC4066BFS			
IC906	8-759-059-03	IC LM324PW			
IC907	8-759-075-70	IC TA75S393F			
IC908	8-759-058-45	IC NJM3403AV			
		< COIL >			
L901	1-410-381-11	INDUCTOR CHIP 10uH			
		< TRANSISTOR >			
Q901	8-729-402-81	TRANSISTOR XN4501			
Q902	8-729-403-27	TRANSISTOR XN4401			
Q903	8-729-402-81	TRANSISTOR XN4501			
Q905	8-729-402-81	TRANSISTOR XN4501			
Q906	8-729-010-60	TRANSISTOR MSA1586-BC			
Q907	8-729-402-84	TRANSISTOR XN4601			
Q908	8-729-402-45	TRANSISTOR UN5212			
Q909	8-729-010-75	TRANSISTOR MSC4116-BC			
Q910	8-729-010-75	TRANSISTOR MSC4116-BC			
Q911	8-729-010-75	TRANSISTOR MSC4116-BC			
Q912	8-729-010-75	TRANSISTOR MSC4116-BC			
Q913	8-729-010-75	TRANSISTOR MSC4116-BC			
		< RESISTOR >			
R901	1-216-823-11	METAL CHIP	1.5K	5% 1/16W	
R902	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R903	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R904	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R905	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R906	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R907	1-216-814-11	METAL CHIP	270	5% 1/16W	
R908	1-218-270-11	METAL CHIP	1.1K	5% 1/16W	
R909	1-216-823-11	METAL CHIP	1.5K	5% 1/16W	
R910	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R911	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R912	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R913	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R914	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R915	1-216-840-11	METAL CHIP	39K	5% 1/16W	
R916	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R917	1-216-823-11	METAL CHIP	1.5K	5% 1/16W	
R918	1-216-839-11	METAL CHIP	33K	5% 1/16W	
R919	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R920	1-216-827-11	METAL CHIP	3.3K	5% 1/16W	
R921	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R922	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R923	1-216-826-11	METAL CHIP	2.7K	5% 1/16W	
R925	1-216-853-11	METAL CHIP	470K	5% 1/16W	
R926	1-216-831-11	METAL CHIP	6.8K	5% 1/16W	
R927	1-216-845-11	METAL CHIP	100K	5% 1/16W	

Ref. No.	Part No.	Description			Remark
R928	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R929	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R930	1-216-845-11	METAL CHIP	100K	5% 1/16W	
R931	1-216-834-11	METAL CHIP	12K	5% 1/16W	
R932	1-216-841-11	METAL CHIP	47K	5% 1/16W	
R933	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R934	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R935	1-216-819-11	METAL CHIP	680	5% 1/16W	
R936	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R937	1-216-825-11	METAL CHIP	2.2K	5% 1/16W	
R938	1-216-834-11	METAL CHIP	12K	5% 1/16W	
R939	1-216-838-11	METAL CHIP	27K	5% 1/16W	
R946	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R949	1-216-833-11	METAL CHIP	10K	5% 1/16W	
R950	1-218-721-11	METAL CHIP	16K	0.50% 1/16W	
R951	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R952	1-218-721-11	METAL CHIP	16K	0.50% 1/16W	
R953	1-216-821-11	METAL CHIP	1K	5% 1/16W	
R960	1-216-833-11	METAL CHIP	10K	5% 1/16W	
**********					
*	A-7063-561-A	VF-41P BOARD, COMPLETE			
		**********			
		(Ref. No. 7,000 Series)			
		< CAPACITOR >			
C951	1-126-176-11	ELECT	220uF	20% 10V	
C952	1-163-077-00	CERAMIC CHIP	0.1uF	10% 25V	
C954	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	
C955	1-163-037-11	CERAMIC CHIP	0.022uF	10% 25V	
C956	1-131-381-00	TANTALUM	47uF	10% 10V	
C957	1-162-638-11	CERAMIC CHIP	1uF	16V	
C958	1-136-718-11	FILM, CHIP	0.1uF	5% 25V	
C959	1-163-115-00	CERAMIC CHIP	82PF	5% 50V	
C960	1-127-515-11	ELECT(SOLID)	47uF	20% 6.3V	
⚠C961	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
⚠C962	1-162-625-11	CERAMIC CHIP	0.0047uF	5% 50V	
⚠C963	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C964	1-126-090-11	ELECT	82uF	20% 10V	
C965	1-124-257-00	ELECT	2.2uF	20% 50V	
C966	1-163-037-11	CERAMIC CHIP	0.022uF	10% 25V	
C967	1-164-611-11	CERAMIC CHIP	0.001uF	10% 500V	
⚠C968	1-162-625-11	CERAMIC CHIP	0.0047uF	5% 50V	
		< CONNECTOR >			
* CN951	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P			
* CN952	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN953	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
		< DIODE >	
D951	8-719-320-65	DIODE TLS221	
D953	8-719-400-20	DIODE MA152WA	
		< IC >	
IC951	8-759-420-01	IC AN2512S	
		< COIL >	
⚠L951	1-412-331-11	INDUCTOR CHIP 47uH	
L952	1-408-781-00	INDUCTOR CHIP 22uH	
⚠L953	1-459-376-41	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q951	8-729-216-31	TRANSISTOR 2SA1163-G	
Q952	8-729-106-68	TRANSISTOR 2SD1615A-GP	
		< RESISTOR >	
R951	1-216-041-00	METAL CHIP 470 5% 1/10W	
R953	1-216-041-00	METAL CHIP 470 5% 1/10W	
R955	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R956	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R957	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R958	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R959	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R960	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R962	1-216-336-11	METAL CHIP 47K 1% 1/10W	
R963	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R964	1-216-025-00	METAL CHIP 100 5% 1/10W	
R965	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R966	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R967	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R968	1-216-039-00	METAL CHIP 390 5% 1/10W	
R969	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R971	1-216-370-11	METAL CHIP 180K 1% 1/10W	
R973	1-216-005-00	METAL CHIP 15 5% 1/10W	
R974	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R975	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R976	1-216-125-00	METAL CHIP 1.5M 5% 1/10W	
R977	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R978	1-216-011-00	METAL CHIP 27 5% 1/10W	
		< VARIABLE RESISTOR >	
RV951	1-238-858-11	RES, ADJ, CERMET 47K	
RV952	1-238-852-11	RES, ADJ, CERMET 470	
RV953	1-238-854-11	RES, ADJ, CERMET 2.2K	
RV954	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M	
RV955	1-238-862-11	RES, ADJ, CERMET 1M	

Ref.No.	Part No.	Description	Remark
		< TRASFORMER >	
⚠T951	1-439-494-11	TRANSFORMER ASSY, FLYBACK	
		< THERMISTOR >	
TH951	1-809-350-21	THERMISTOR	
		< FLEXIBLE BOARD >	
W951	1-526-978-41	SOCKET ASSY, CRT	
**********			
*	A-7063-551-A	VI-122 BOARD, COMPLETE (AEP, UK) ********** (Ref. No. 5,000 Series)	
*	A-7063-590-A	VI-122 BOARD, COMPLETE (E, AUS, TR) ********** (Ref. No. 5,000 Series)	
		< CAPACITOR >	
C550	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C551	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C552	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C553	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C554	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C555	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C556	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C557	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C558	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C559	1-135-163-21	TANTALUM CHIP 47uF 20% 4V	
C561	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C562	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C563	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C564	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C565	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C566	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C567	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C568	1-164-344-11	CERAMIC CHIP 0.068uF 10% 25V	
C569	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C570	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C571	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C572	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C573	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C574	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C575	1-164-346-11	CERAMIC CHIP 1uF 16V	
C578	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C579	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C580	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C581	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C582	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
C583	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C584	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C585	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C587	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C588	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C589	1-164-816-11	CERAMIC CHIP 220PF 2% 50V	
C590	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C591	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C592	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C593	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C594	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C595	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C597	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C598	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C599	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C600	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C601	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C602	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C603	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C604	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C605	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C606	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C607	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C608	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C609	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C610	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C611	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C612	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C613	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C614	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C615	1-164-346-11	CERAMIC CHIP 1uF 16V	
C617	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C618	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C619	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C620	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C621	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C622	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C623	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C624	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C625	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C626	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C627	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C628	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C629	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C630	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C631	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C632	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C633	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C634	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C635	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	

Ref.No.	Part No.	Description	Remark
C636	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C637	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C638	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C640	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C641	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C642	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C643	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C644	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C645	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C646	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C647	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C648	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C649	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C650	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C651	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C652	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C653	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C655	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C656	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C657	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V	
C658	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C659	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C660	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C661	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C662	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C663	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C664	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C665	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C666	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C667	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C668	1-162-924-11	CERAMIC CHIP 56PF 5% 50V	
C669	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C670	1-135-211-11	TANTALUM CHIP 6.8uF 20% 6.3V	
C671	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C672	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C673	1-164-816-11	CERAMIC CHIP 220PF 2% 50V	
C674	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C675	1-164-816-11	CERAMIC CHIP 220PF 2% 50V	
C676	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C677	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C678	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C679	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C680	1-164-383-11	CERAMIC CHIP 110PF 5% 50V	
C681	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C682	1-135-091-00	TANTALUM CHIP 1uF 20% 16V	
C683	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C684	1-135-179-21	TANTALUM CHIP 2.2uF 20% 16V	
C685	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C686	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C687	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

Ref.No.	Part No.	Description			Remark
C688	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C689	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C690	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C691	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C692	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C693	1-135-163-21	TANTALUM CHIP	47uF	20%	4V
C694	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C697	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C698	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C700	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C701	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C702	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C703	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C704	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C705	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C706	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C707	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C708	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C709	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C710	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C712	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C715	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C716	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C717	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C718	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C719	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C720	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C721	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C722	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C800	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C801	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C802	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C807	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C808	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C809	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C811	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C812	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C813	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C814	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C815	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C817	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C818	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C821	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C822	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C823	1-162-919-11	CERAMIC CHIP	22PF	5%	50V

Ref.No.	Part No.	Description			Remark
C824	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C825	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C826	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C827	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C828	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C829	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C831	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C832	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C835	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C838	1-162-975-11	CERAMIC CHIP	24PF	5%	50V
C839	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C840	1-164-346-11	CERAMIC CHIP	1uF		16V
C841	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C842	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C843	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C844	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C845	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C846	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C847	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C848	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C849	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C850	1-164-346-11	CERAMIC CHIP	1uF		16V
C851	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C852	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C853	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C856	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C857	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C858	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C859	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C860	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C861	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C862	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C863	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C864	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C865	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C866	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C867	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C868	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C869	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C870	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C871	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C872	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C873	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C874	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C875	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C876	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C877	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C878	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C879	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C880	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C881	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C883	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C885	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C886	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C887	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C888	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C889	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C890	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C891	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C892	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C893	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C894	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C895	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C896	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C897	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C898	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C899	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C900	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C907	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C908	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C910	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C911	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C912	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C913	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C914	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C915	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C916	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C917	1-126-246-11	ELECT CHIP	220uF	20%	4V
C918	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C919	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C920	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C921	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C922	1-135-211-11	TANTALUM CHIP	6.8uF	20%	6.3V
C923	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C924	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C925	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C926	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C927	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C928	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C929	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C930	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C931	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C932	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C933	1-135-148-21	TANTALUM CHIP	1.5uF	20%	10V
C934	1-162-918-11	CERAMIC CHIP	18PF	5%	50V

Ref.No.	Part No.	Description			Remark
C935	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C936	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C937	1-135-202-21	TANTALUM CHIP	22uF	20%	4V
C938	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C939	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C940	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C941	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C942	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C943	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C944	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C945	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C946	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C947	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C948	1-164-346-11	CERAMIC CHIP	1uF		16V
C949	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C950	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C953	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C954	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C955	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C956	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C985	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C986	1-162-924-11	CERAMIC CHIP	56PF	5%	50V

< CONNECTOR >

CN800	1-691-524-11	CONNECTOR, BOARD TO BOARD 20P	

< DIODE >

D550	8-719-404-35	DIODE	MA141WK
D551	8-719-404-46	DIODE	MA110
D552	8-719-404-35	DIODE	MA141WK
D553	8-719-404-46	DIODE	MA110
D555	8-719-404-46	DIODE	MA110
D556	8-719-404-46	DIODE	MA110
D557	8-719-404-46	DIODE	MA110
D801	8-719-404-40	DIODE	MA121
D802	8-719-404-40	DIODE	MA121
D803	8-719-404-35	DIODE	MA141WK
D805	8-719-404-46	DIODE	MA110
D806	8-719-027-65	DIODE	MA8075-10
D807	8-719-027-65	DIODE	MA8075-10
D808	8-719-027-65	DIODE	MA8075-10
D809	8-719-027-65	DIODE	MA8075-10
D810	8-719-027-65	DIODE	MA8075-10
D811	8-719-027-65	DIODE	MA8075-10
D812	8-719-027-65	DIODE	MA8075-10
D813	8-719-027-65	DIODE	MA8075-10
D814	8-719-027-65	DIODE	MA8075-10
D815	8-719-027-65	DIODE	MA8075-10
D816	8-719-027-65	DIODE	MA8075-10
D817	8-719-027-65	DIODE	MA8075-10

Ref.No.	Part No.	Description	Remark
D818	8-719-800-76	DIODE 1SS226	
D819	8-719-404-35	DIODE MA141WK	
D821	8-719-027-65	DIODE MA8075-10	
		< FILTER >	
FL550	1-236-775-11	FILTER, LOW PASS (DEM)	
FL551	1-236-848-21	FILTER, LOW PASS	
FL552	1-239-112-21	FILTER, LOW PASS (Y)	
FL553	1-236-757-21	FILTER, LOW PASS (C)	
FL554	1-236-849-11	FILTER, BAND PASS	
FL555	1-579-371-11	FILTER, CERAMIC	
FL556	1-236-850-11	FILTER, BAND PASS	
FL557	1-236-186-11	FILTER, BAND PASS	
FL800	1-409-475-21	FILTER, TRAP	
		< IC >	
IC550	8-752-333-24	IC CXL1506M	
IC551	8-752-065-54	IC CXA1207AR	
IC552	8-752-340-25	IC CXL5505M	
IC553	8-752-053-21	IC CXA1211M	
IC554	8-759-636-33	IC CXA1452N	
IC555	8-752-605-61	IC CXA1203N	
IC556	8-752-065-56	IC CXA1208R	
IC800	8-759-518-90	IC MB88362PFV	
IC801	8-759-064-36	IC MB88346BPFV	
IC802	8-759-518-90	IC MB88362PFV	
IC803	8-752-053-21	IC CXA1211M	
IC804	8-752-058-02	IC CXA1509AR	
IC805	8-759-085-51	IC NJM2284M	
IC806	8-759-710-07	IC NJM2234M	
IC807	8-759-075-64	IC LV4101W	
IC808	8-759-038-83	IC MC13400FU	
IC809	8-752-350-78	IC CXK58257AM-70L	
IC810	8-759-514-57	IC BA7046F	
IC811	8-752-053-21	IC CXA1211M	
IC812	8-759-710-29	IC NJM2235M	
		< COIL >	
L550	1-410-389-31	INDUCTOR CHIP 47uH	
L551	1-410-381-11	INDUCTOR CHIP 10uH	
L552	1-412-058-11	INDUCTOR CHIP 10uH	
L553	1-412-058-11	INDUCTOR CHIP 10uH	
L554	1-410-386-11	INDUCTOR CHIP 27uH	
L555	1-410-379-31	INDUCTOR CHIP 6.8uH	
L556	1-410-389-31	INDUCTOR CHIP 47uH	
L557	1-410-389-31	INDUCTOR CHIP 47uH	
L558	1-410-380-31	INDUCTOR CHIP 8.2uH	
L559	1-412-058-11	INDUCTOR CHIP 10uH	
L560	1-410-383-31	INDUCTOR CHIP 15uH	
L561	1-410-389-31	INDUCTOR CHIP 47uH	
L562	1-410-386-11	INDUCTOR CHIP 27uH	
L563	1-410-391-11	INDUCTOR CHIP 68uH	
L564	1-412-950-11	INDUCTOR 8.2uH	
L565	1-412-956-21	INDUCTOR 27uH	
L566	1-412-949-21	INDUCTOR 6.8uH	
L568	1-412-058-11	INDUCTOR CHIP 10uH	
L569	1-410-393-11	INDUCTOR CHIP 100uH	
L570	1-410-381-11	INDUCTOR CHIP 10uH	
L571	1-410-655-31	INDUCTOR CHIP 120uH	
L572	1-410-391-11	INDUCTOR CHIP 68uH	
L573	1-410-655-31	INDUCTOR CHIP 120uH	
L575	1-410-393-11	INDUCTOR CHIP 100uH	
L576	1-410-386-11	INDUCTOR CHIP 27uH	
L578	1-412-951-11	INDUCTOR 10uH	
L579	1-412-946-11	INDUCTOR 3.9uH	
L580	1-412-945-11	INDUCTOR 3.3uH	
L581	1-410-385-11	INDUCTOR CHIP 22uH	
L582	1-410-385-11	INDUCTOR CHIP 22uH	
L583	1-412-960-21	INDUCTOR 56uH	
L799	1-410-383-31	INDUCTOR CHIP 15uH	
L800	1-412-058-11	INDUCTOR CHIP 10uH	
L801	1-410-379-31	INDUCTOR CHIP 6.8uH	
L802	1-410-386-11	INDUCTOR CHIP 27uH	
L803	1-410-380-31	INDUCTOR CHIP 8.2uH	
L804	1-412-282-41	INDUCTOR 470uH	
L805	1-410-389-31	INDUCTOR CHIP 47uH	
L806	1-410-389-31	INDUCTOR CHIP 47uH	
L807	1-410-657-21	INDUCTOR CHIP 180uH	
L808	1-410-383-31	INDUCTOR CHIP 15uH	
L809	1-412-058-11	INDUCTOR CHIP 10uH	
L810	1-410-381-11	INDUCTOR CHIP 10uH	
L811	1-410-384-31	INDUCTOR CHIP 18uH	
L812	1-410-386-11	INDUCTOR CHIP 27uH	
L813	1-412-280-31	INDUCTOR 330uH	
L814	1-410-384-31	INDUCTOR CHIP 18uH	
L815	1-410-376-21	INDUCTOR CHIP 3.9uH	
L816	1-410-656-11	INDUCTOR CHIP 150uH	
L817	1-410-393-11	INDUCTOR CHIP 100uH	
L820	1-410-384-31	INDUCTOR CHIP 18uH	
L821	1-410-386-11	INDUCTOR CHIP 27uH	
L822	1-412-058-11	INDUCTOR CHIP 10uH	
L825	1-412-058-11	INDUCTOR CHIP 10uH	
L827	1-412-058-11	INDUCTOR CHIP 10uH	
L828	1-410-387-11	INDUCTOR CHIP 33uH	
L829	1-412-058-11	INDUCTOR CHIP 10uH	
L831	1-410-369-11	INDUCTOR CHIP 1uH	
L832	1-412-058-11	INDUCTOR CHIP 10uH	
L833	1-410-389-31	INDUCTOR CHIP 47uH	
L834	1-412-949-21	INDUCTOR 6.8uH	

Ref.No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q550	8-729-010-60	TRANSISTOR MSA1586-BC	
Q551	8-729-010-60	TRANSISTOR MSA1586-BC	
Q552	8-729-824-05	TRANSISTOR 3SK248	
Q553	8-729-402-42	TRANSISTOR UN5213	
Q555	8-729-402-42	TRANSISTOR UN5213	
Q556	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q557	8-729-402-42	TRANSISTOR UN5213	
Q558	8-729-402-42	TRANSISTOR UN5213	
Q559	8-729-403-35	TRANSISTOR UN5113	
Q560	8-729-420-13	TRANSISTOR XN4213	
Q561	8-729-402-42	TRANSISTOR UN5213	
Q562	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q563	8-729-010-75	TRANSISTOR MSC4116-BC	
Q564	8-729-423-55	TRANSISTOR 2SC3931-D	
Q565	8-729-420-47	TRANSISTOR UN511L	
Q566	8-729-402-42	TRANSISTOR UN5213	
Q567	8-729-402-42	TRANSISTOR UN5213	
Q568	8-729-010-60	TRANSISTOR MSA1586-BC	
Q569	8-729-402-81	TRANSISTOR XN4501	
Q570	8-729-403-35	TRANSISTOR UN5113	
Q571	8-729-010-75	TRANSISTOR MSC4116-BC	
Q572	8-729-010-75	TRANSISTOR MSC4116-BC	
Q574	8-729-010-60	TRANSISTOR MSA1586-BC	
Q575	8-729-403-35	TRANSISTOR UN5113	
Q576	8-729-420-47	TRANSISTOR UN511L	
Q577	8-729-010-60	TRANSISTOR MSA1586-BC	
Q578	8-729-010-75	TRANSISTOR MSC4116-BC	
Q579	8-729-423-55	TRANSISTOR 2SC3931-D	
Q580	8-729-010-75	TRANSISTOR MSC4116-BC	
Q581	8-729-010-60	TRANSISTOR MSA1586-BC	
Q582	8-729-209-07	TRANSISTOR 2SC4213-B	
Q583	8-729-402-42	TRANSISTOR UN5213	
Q584	8-729-403-06	TRANSISTOR XN1113	
Q585	8-729-209-07	TRANSISTOR 2SC4213-B	
Q586	8-729-010-75	TRANSISTOR MSC4116-BC	
Q587	8-729-013-88	TRANSISTOR RN1302	
Q588	8-729-420-47	TRANSISTOR UN511L	
Q589	8-729-010-60	TRANSISTOR MSA1586-BC	
Q590	8-729-402-42	TRANSISTOR UN5213	
Q591	8-729-402-42	TRANSISTOR UN5213	
Q592	8-729-402-42	TRANSISTOR UN5213	
Q593	8-729-402-42	TRANSISTOR UN5213	
Q594	8-729-010-75	TRANSISTOR MSC4116-BC	
Q595	8-729-423-55	TRANSISTOR 2SC3931-D	
Q596	8-729-010-75	TRANSISTOR MSC4116-BC	
Q597	8-729-010-60	TRANSISTOR MSA1586-BC	
Q598	8-729-010-60	TRANSISTOR MSA1586-BC	
Q599	8-729-010-60	TRANSISTOR MSA1586-BC	
Q600	8-729-403-35	TRANSISTOR UN5113	
Q601	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q602	8-729-010-75	TRANSISTOR MSC4116-BC	
Q603	8-729-403-35	TRANSISTOR UN5113	
Q604	8-729-010-75	TRANSISTOR MSC4116-BC	
Q605	8-729-013-88	TRANSISTOR RN1302	
Q606	8-729-010-60	TRANSISTOR MSA1586-BC	
Q607	8-729-010-75	TRANSISTOR MSC4116-BC	
Q608	8-729-010-75	TRANSISTOR MSC4116-BC	
Q609	8-729-010-75	TRANSISTOR MSC4116-BC	
Q610	8-729-010-75	TRANSISTOR MSC4116-BC	
Q612	8-729-010-60	TRANSISTOR MSA1586-BC	
Q613	8-729-402-42	TRANSISTOR UN5213	
Q614	8-729-403-35	TRANSISTOR UN5113	
Q615	8-729-010-75	TRANSISTOR MSC4116-BC	
Q616	8-729-010-75	TRANSISTOR MSC4116-BC	
Q618	8-729-010-75	TRANSISTOR MSC4116-BC	
Q619	8-729-010-75	TRANSISTOR MSC4116-BC	
Q620	8-729-010-75	TRANSISTOR MSC4116-BC	
Q621	8-729-010-75	TRANSISTOR MSC4116-BC	
Q622	8-729-402-42	TRANSISTOR UN5213	
Q623	8-729-403-35	TRANSISTOR UN5113	
Q624	8-729-010-60	TRANSISTOR MSA1586-BC	
Q625	8-729-013-88	TRANSISTOR RN1302	
Q626	8-729-402-42	TRANSISTOR UN5213	
Q627	8-729-423-55	TRANSISTOR 2SC3931-D	
Q628	8-729-013-88	TRANSISTOR RN1302	
Q800	8-729-010-75	TRANSISTOR MSC4116-BC	
Q801	8-729-403-07	TRANSISTOR XN1213	
Q802	8-729-403-06	TRANSISTOR XN1113	
Q804	8-729-010-75	TRANSISTOR MSC4116-BC	
Q805	8-729-010-75	TRANSISTOR MSC4116-BC	
Q806	8-729-402-13	TRANSISTOR XN1501	
Q807	8-729-010-75	TRANSISTOR MSC4116-BC	
Q808	8-729-010-75	TRANSISTOR MSC4116-BC	
Q809	8-729-402-42	TRANSISTOR UN5213	
Q810	8-729-010-75	TRANSISTOR MSC4116-BC	
Q811	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q812	8-729-402-42	TRANSISTOR UN5213	
Q814	8-729-010-60	TRANSISTOR MSA1586-BC	
Q815	8-729-010-60	TRANSISTOR MSA1586-BC	
Q817	8-729-010-60	TRANSISTOR MSA1586-BC	
Q818	8-729-010-75	TRANSISTOR MSC4116-BC	
Q819	8-729-010-60	TRANSISTOR MSA1586-BC	
Q820	8-729-402-42	TRANSISTOR UN5213	
Q821	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q822	8-729-010-60	TRANSISTOR MSA1586-BC	
Q824	8-729-402-42	TRANSISTOR UN5213	
Q826	8-729-010-75	TRANSISTOR MSC4116-BC	
Q827	8-729-010-75	TRANSISTOR MSC4116-BC	
Q828	8-729-010-60	TRANSISTOR MSA1586-BC	

Ref.No.	Part No.	Description				Remark
Q829	8-729-402-42	TRANSISTOR	UN5213			
Q831	8-729-402-42	TRANSISTOR	UN5213			
Q832	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q833	8-729-402-42	TRANSISTOR	UN5213			
Q834	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q835	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q836	8-729-402-78	TRANSISTOR	XN6401			
Q837	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q838	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q839	8-729-824-05	TRANSISTOR	3SK248			
Q840	8-729-824-05	TRANSISTOR	3SK248			
Q841	8-729-117-31	TRANSISTOR	2SC4177-L5			
Q842	8-729-420-53	TRANSISTOR	UN5115			
Q843	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q844	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q845	8-729-106-60	TRANSISTOR	2SB1115A-YQ			
Q846	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q847	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q848	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q852	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q853	8-729-402-42	TRANSISTOR	UN5213			
Q855	8-729-420-50	TRANSISTOR	UN5215			
Q856	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q857	8-729-010-75	TRANSISTOR	MSC4116-BC			
Q860	8-729-402-42	TRANSISTOR	UN5213			
Q861	8-729-402-42	TRANSISTOR	UN5213			
Q862	8-729-402-42	TRANSISTOR	UN5213			
		< RESISTOR >				
R550	1-216-817-11	METAL CHIP	470	5%	1/16W	
R551	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R552	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R553	1-216-817-11	METAL CHIP	470	5%	1/16W	
R554	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R555	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R556	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R559	1-216-804-11	METAL CHIP	39	5%	1/16W	
R560	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R561	1-216-803-11	METAL CHIP	33	5%	1/16W	
R562	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R564	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R566	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R568	1-216-817-11	METAL CHIP	470	5%	1/16W	
R569	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R570	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R571	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R572	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R573	1-216-818-11	METAL CHIP	560	5%	1/16W	
R574	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R575	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R576	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R577	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R578	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R579	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R580	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R581	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R582	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R583	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R584	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R585	1-216-819-11	METAL CHIP	680	5%	1/16W	
R586	1-216-820-11	METAL CHIP	820	5%	1/16W	
R587	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R588	1-216-817-11	METAL CHIP	470	5%	1/16W	
R589	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R590	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R591	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R593	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R594	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R595	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R596	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R597	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R598	1-216-864-11	METAL CHIP	0	5%	1/16W	
R599	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R600	1-216-810-11	METAL CHIP	120	5%	1/16W	
R601	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R604	1-216-813-11	METAL CHIP	220	5%	1/16W	
R605	1-216-813-11	METAL CHIP	220	5%	1/16W	
R606	1-216-864-11	METAL CHIP	0	5%	1/16W	
R608	1-216-864-11	METAL CHIP	0	5%	1/16W	
R609	1-216-814-11	METAL CHIP	270	5%	1/16W	
R612	1-216-864-11	METAL CHIP	0	5%	1/16W	
R613	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R614	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R615	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R616	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R617	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R618	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R619	1-216-817-11	METAL CHIP	470	5%	1/16W	
R620	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R621	1-216-813-11	METAL CHIP	220	5%	1/16W	
R622	1-216-864-11	METAL CHIP	0	5%	1/16W	
R623	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R624	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R625	1-218-704-11	METAL CHIP	3.3K	0.50%	1/16W	
R626	1-216-815-11	METAL CHIP	330	5%	1/16W	
R627	1-216-820-11	METAL CHIP	820	5%	1/16W	
R628	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R629	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R630	1-216-816-11	METAL CHIP	390	5%	1/16W	
R631	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R632	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R633	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R634	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R635	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R636	1-216-816-11	METAL CHIP	390	5%	1/16W	
R637	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R638	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R639	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R640	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R641	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R642	1-216-817-11	METAL CHIP	470	5%	1/16W	
R643	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R644	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R645	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R646	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R647	1-216-810-11	METAL CHIP	120	5%	1/16W	
R648	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R649	1-216-864-11	METAL CHIP	0	5%	1/16W	
R651	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R652	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R653	1-216-815-11	METAL CHIP	330	5%	1/16W	
R654	1-216-814-11	METAL CHIP	270	5%	1/16W	
R655	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R656	1-216-864-11	METAL CHIP	0	5%	1/16W	
R657	1-216-295-91	METAL CHIP	0	5%	1/16W	
R658	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R659	1-216-817-11	METAL CHIP	470	5%	1/16W	
R660	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R661	1-216-809-11	METAL CHIP	100	5%	1/16W	
R662	1-216-813-11	METAL CHIP	220	5%	1/16W	
R663	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R664	1-216-806-11	METAL CHIP	56	5%	1/16W	
R665	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R666	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R667	1-216-817-11	METAL CHIP	470	5%	1/16W	
R668	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R669	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R670	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R671	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R672	1-216-813-11	METAL CHIP	220	5%	1/16W	
R673	1-216-813-11	METAL CHIP	220	5%	1/16W	
R674	1-216-813-11	METAL CHIP	220	5%	1/16W	
R675	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R676	1-216-813-11	METAL CHIP	220	5%	1/16W	
R677	1-216-813-11	METAL CHIP	220	5%	1/16W	
R678	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R679	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R681	1-216-813-11	METAL CHIP	220	5%	1/16W	
R682	1-216-801-11	METAL CHIP	22	5%	1/16W	
R683	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R684	1-216-817-11	METAL CHIP	470	5%	1/16W	
R685	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R686	1-216-818-11	METAL CHIP	560	5%	1/16W	
R687	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R688	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R689	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R690	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R691	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R692	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R693	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R694	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R695	1-216-818-11	METAL CHIP	560	5%	1/16W	
R696	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R698	1-216-813-11	METAL CHIP	220	5%	1/16W	
R699	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R700	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R703	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R705	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R706	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R707	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R708	1-216-864-11	METAL CHIP	0	5%	1/16W	
R709	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R710	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R711	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R714	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R715	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R716	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R717	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R718	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R719	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R720	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R721	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R722	1-216-864-11	METAL CHIP	0	5%	1/16W	
R723	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R724	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R726	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R727	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R728	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R729	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R730	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R731	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R732	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R733	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R734	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R735	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R736	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R737	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R738	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R739	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R740	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R742	1-216-817-11	METAL CHIP	470	5%	1/16W	
R743	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R745	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R746	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R747	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R748	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R749	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R750	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R751	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R752	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R753	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R754	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R755	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R756	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R757	1-216-817-11	METAL CHIP	470	5%	1/16W	
R758	1-216-815-11	METAL CHIP	330	5%	1/16W	
R760	1-216-864-11	METAL CHIP	0	5%	1/16W	
R762	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
R763	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R764	1-216-864-11	METAL CHIP	0	5%	1/16W	
R767	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R768	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R769	1-216-864-11	METAL CHIP	0	5%	1/16W	
R770	1-218-714-11	METAL CHIP	8.2K	0.50%	1/16W	
R771	1-218-714-11	METAL CHIP	8.2K	0.50%	1/16W	
R773	1-218-734-11	METAL CHIP	56K	0.50%	1/16W	
R775	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R776	1-218-720-11	METAL CHIP	15K	0.50%	1/16W	
R777	1-218-732-11	METAL CHIP	47K	0.50%	1/16W	
R778	1-216-809-11	METAL CHIP	100	5%	1/16W	
R779	1-216-809-11	METAL CHIP	100	5%	1/16W	
R780	1-216-817-11	METAL CHIP	470	5%	1/16W	
R781	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R782	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R783	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R784	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R785	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R786	1-216-815-11	METAL CHIP	330	5%	1/16W	
R787	1-216-813-11	METAL CHIP	220	5%	1/16W	
R793	1-216-817-11	METAL CHIP	470	5%	1/16W	
R794	1-216-817-11	METAL CHIP	470	5%	1/16W	
R795	1-216-814-11	METAL CHIP	270	5%	1/16W	
R796	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R797	1-216-815-11	METAL CHIP	330	5%	1/16W	
R798	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R799	1-216-817-11	METAL CHIP	470	5%	1/16W	
R800	1-216-838-11	METAL CHIP	27K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R801	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R802	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R803	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R805	1-216-817-11	METAL CHIP	470	5%	1/16W	
R807	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R808	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R809	1-216-817-11	METAL CHIP	470	5%	1/16W	
R810	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R811	1-216-817-11	METAL CHIP	470	5%	1/16W	
R812	1-216-817-11	METAL CHIP	470	5%	1/16W	
R813	1-216-819-11	METAL CHIP	680	5%	1/16W	
R814	1-216-864-11	METAL CHIP	0	5%	1/16W	
R815	1-216-817-11	METAL CHIP	470	5%	1/16W	
R816	1-216-809-11	METAL CHIP	100	5%	1/16W	
R817	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R818	1-216-813-11	METAL CHIP	220	5%	1/16W	
R819	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R820	1-216-817-11	METAL CHIP	470	5%	1/16W	
R821	1-216-818-11	METAL CHIP	560	5%	1/16W	
R822	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R823	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R824	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R825	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R826	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R827	1-216-864-11	METAL CHIP	0	5%	1/16W	
R828	1-216-821-91	METAL CHIP	1K	5%	1/16W	
R829	1-216-819-91	METAL CHIP	680	5%	1/16W	
R830	1-216-818-11	METAL CHIP	560	5%	1/16W	
R831	1-216-817-11	METAL CHIP	470	5%	1/16W	
R832	1-216-817-11	METAL CHIP	470	5%	1/16W	
R833	1-216-864-11	METAL CHIP	0	5%	1/16W	
R834	1-216-819-11	METAL CHIP	680	5%	1/16W	
R835	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R836	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R838	1-216-818-11	METAL CHIP	560	5%	1/16W	
R840	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R841	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R842	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R843	1-216-813-11	METAL CHIP	220	5%	1/16W	
R844	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R845	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R846	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R847	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R848	1-216-864-11	METAL CHIP	0	5%	1/16W	
R849	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R850	1-216-814-11	METAL CHIP	270	5%	1/16W	
R851	1-216-816-11	METAL CHIP	390	5%	1/16W	
R852	1-216-864-11	METAL CHIP	0	5%	1/16W	
R853	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R854	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R855	1-216-820-11	METAL CHIP	820	5%	1/16W	
R856	1-216-814-11	METAL CHIP	270	5%	1/16W	
R857	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R858	1-216-819-11	METAL CHIP	680	5%	1/16W	
R859	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R860	1-216-815-11	METAL CHIP	330	5%	1/16W	
R861	1-216-810-11	METAL CHIP	120	5%	1/16W	
R862	1-216-817-11	METAL CHIP	470	5%	1/16W	
R863	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R864	1-216-813-11	METAL CHIP	220	5%	1/16W	
R865	1-216-813-11	METAL CHIP	220	5%	1/16W	
R868	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R869	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R870	1-216-817-11	METAL CHIP	470	5%	1/16W	
R871	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R872	1-216-816-11	METAL CHIP	390	5%	1/16W	
R873	1-216-813-11	METAL CHIP	220	5%	1/16W	
R874	1-216-819-11	METAL CHIP	680	5%	1/16W	
R875	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R876	1-216-817-11	METAL CHIP	470	5%	1/16W	
R877	1-216-819-11	METAL CHIP	680	5%	1/16W	
R878	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R879	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R880	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R881	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R882	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R883	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R886	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R887	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R888	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R889	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R890	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R891	1-216-817-11	METAL CHIP	470	5%	1/16W	
R892	1-216-817-11	METAL CHIP	470	5%	1/16W	
R894	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R896	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R897	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R898	1-216-864-11	METAL CHIP	0	5%	1/16W	
R899	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R900	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R901	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R902	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R903	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R904	1-216-864-11	METAL CHIP	0	5%	1/16W	
R906	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R907	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R908	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R909	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R911	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R912	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R913	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R914	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R915	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R916	1-216-813-11	METAL CHIP	220	5%	1/16W	
R917	1-216-818-11	METAL CHIP	560	5%	1/16W	
R918	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R919	1-216-864-11	METAL CHIP	0	5%	1/16W	
R920	1-216-864-11	METAL CHIP	0	5%	1/16W	
R922	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R928	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R929	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R930	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R931	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R932	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R933	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R934	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R935	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R936	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R937	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R938	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R939	1-216-803-11	METAL CHIP	33	5%	1/16W	
R940	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R941	1-216-803-11	METAL CHIP	33	5%	1/16W	
R942	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R943	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R944	1-216-817-11	METAL CHIP	470	5%	1/16W	
R945	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R946	1-216-817-11	METAL CHIP	470	5%	1/16W	
R947	1-216-804-11	METAL CHIP	39	5%	1/16W	
R948	1-216-804-11	METAL CHIP	39	5%	1/16W	
R949	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R950	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R951	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R952	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R953	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R954	1-218-743-11	METAL CHIP	130K	0.50%	1/16W	
R955	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R956	1-216-815-11	METAL CHIP	330	5%	1/16W	
R957	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R958	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R959	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R960	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R961	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R962	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R963	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R964	1-216-815-11	METAL CHIP	330	5%	1/16W	
R966	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R967	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R968	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R969	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R970	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R971	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R972	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R973	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R974	1-216-864-11	METAL CHIP	0	5%	1/16W	
R976	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R977	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R978	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R979	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R983	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R984	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R985	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R986	1-216-864-11	METAL CHIP	0	5%	1/16W	
R987	1-216-817-11	METAL CHIP	470	5%	1/16W	
R988	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R991	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R992	1-216-820-11	METAL CHIP	820	5%	1/16W	
R993	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R994	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R995	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R996	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R997	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R998	1-216-817-11	METAL CHIP	470	5%	1/16W	

< VARIABLE RESISTOR >

RV550	1-238-853-11	RES, ADJ, CERMET 1K
RV551	1-238-853-11	RES, ADJ, CERMET 1K
RV552	1-238-854-11	RES, ADJ, CERMET 2.2K
RV800	1-238-853-11	RES, ADJ, CERMET 1K

< SWITCH >

SW800	1-553-977-00	SWITCH, SLIDE (IN/OUT) (E, AUS, TR)

< THERMISTOR >

TH550	1-809-354-11	THERMISTOR, NTC (2125)
TH552	1-809-350-21	THERMISTOR, NTC (2125)
TH800	1-809-350-21	THERMISTOR, NTC (2125)

< FLEXIBLE BOARD >

W800	1-696-589-11	CABLE, FLAT (FFC) 6P
W801	1-645-400-11	FP-525 FLEXIBLE BOARD

< VIBRATOR >

X550	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)
X800	1-579-733-21	VIBRATOR, CERAMIC (10.2MHz)

****

Ref.No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
13	1-692-282-11	SWITCH, ROTARY (2100)	
19	1-466-794-21	SWITCH BLOCK, CONTROL (VK2100) (E, AUS, TR)	
19	1-466-794-31	SWITCH BLOCK, CONTROL (VK2100) (AEP, UK)	
68	1-692-285-11	SWITCH, PUSH (2100)	
70	8-814-274-00	MICROPHONE, BUILT-IN C-2035	
73	1-696-590-11	CABLE, FLAT (FFC) 4P	
⚠109	1-452-672-11	CRT ASSY (M01KKX08WB10)	
110	1-645-405-11	FP-532 FLEXIBLE BOARD	
157	1-537-451-11	TERMINAL BOARD	
158	1-645-403-11	FP-526 FLEXIBLE BOARD	
159	1-645-406-11	FP-533 FLEXIBLE BOARD	
160	1-691-471-11	CONNECTOR, TRANSLATION 11P	
167	1-566-850-31	CONNECTOR, (S) TERMINAL 4P	
168	1-645-404-11	FP-531 FLEXIBLE BOARD	
314	1-568-323-11	CONNECTOR (4P)	
408	1-645-318-11	FP-529 FLEXIBLE BOARD	
⚠410	1-466-731-11	CONVERTER UNIT, DC-DC	
416	A-7030-386-A	CCD ASSY (P), PRISM (NOTE 1)	
451	1-547-537-11	LENS, ZOOM (VCL-5512WA)	
457	3-708-525-01	MOTOR ASSY, ZOOM	
458	3-708-523-01	METER ASSY, IRIS	
461	3-708-524-01	MOTOR ASSY, STEPPING (FOCUS)	
M901	A-7048-669-A	DRUM ASSY (DGH-96A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)	(REC PROOF, TAPE SELECT)
S005	1-570-771-21	SWITCH (C DOWN)	

****

ACCESSORIES & PACKING MATERIALS

****

		Remark
	1-466-795-21 REMOTE COMMANDER (RMT-702) (E, AUS, TR)	
	1-466-795-31 REMOTE COMMANDER (RMT-702) (AEP, UK)	
	1-571-164-11 SWITCH, ANTENNA CHANGE (CABLE) (E)	
	1-573-291-11 CONNECTOR, CONVERSION (AEP, UK)	
	1-575-334-11 CORD, CONNECTION (A/V connecting cable)	
	1-575-335-21 CORD, CONNECTION (S VIDEO connecting cable)	
	3-712-673-01 SCREWDRIVER (E)	
	3-742-854-01 COVER, BATTERY (E)	
	3-742-854-11 COVER, BATTERY (E)	
	3-755-638-11 MANUAL, INSTRUCTION (ENGLISH) (AEP, UK)	
	3-755-638-41 MANUAL, INSTRUCTION (FRENCH, DUTCH) (AEP)	
	3-755-638-51 MANUAL, INSTRUCTION (GERMAN, ITALIAN) (AEP)	
	3-755-638-61 MANUAL, INSTRUCTION (SWEDISH) (AEP)	
	3-756-709-51 MANUAL, INSTRUCTION (ENGLISH, SPANISH) (E, TR)	
	3-756-709-61 MANUAL, INSTRUCTION (FRENCH, GERMAN) (E, TR)	
	3-756-709-71 MANUAL, INSTRUCTION (ARABIC) (E)	
	3-756-709-81 MANUAL, INSTRUCTION (CHINESE) (E, TR)	
	3-756-709-91 MANUAL, INSTRUCTION (ENGLISH) (AUS)	
	3-756-732-01 INSTRUCTION	
	3-941-737-01 BELT, SHOULDER	
*	3-952-097-11 INDIVIDUAL CARTON	
*	3-952-098-01 CUSHION, ACC	
*	3-953-172-01 CUSHION (LOWER)	
**	AC-V35	AC POWER ADAPTOR
***	NP-77H	BATTERY PACK

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST

****

#1	7-685-103-19	+ PTPWH (2X5)
#2	7-685-205-19	SCREW +KTP 2X8 TYPE2 NON-SLIT
#3	7-627-554-17	PRECISION SCREW +P 2X3.5 TYPE3
#4	7-621-775-20	SCREW +B 2.6X5
#5	7-627-853-57	PRECISION SCREW +2X5

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 302.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance correction value setting, Outdoor white balance check, Auto white balance check
J-2	ND filter 1.0	J-6080-808-A	IRIS level adjustment, MANUAL GAIN adjustment/check, Auto white balance check
	ND filter 0.9	J-6080-833-A	MAX GAIN adjustment (two used), MANUAL GAIN adjustment/check (two used)
	ND filter 0.4	J-6080-806-A	IRIS level adjustment, SHUTTER IN/OUT adjustment (two used), Auto white balance check
	ND filter 0.1	J-6080-807-A	IRIS level adjustment, SHUTTER IN/OUT adjustment, Auto white balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)Note1	J-6082-053-A	
J-6	Siemens star	J-6080-875-A	Flange back check
J-7	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-8	Extention cord (4P, 1.5 mm)	J-6082-069-A	For extention of the camera block (FU-107 board CN002 ⟷ CAMERA DC/DC converter)
J-9	Extention cord (20P, 0.5 mm)	J-6082-138-A	For extention of the VC-116 board (VC-116 board CN802 ⟷ AF-90 board W001)
	Extention cord (17P, 0.5 mm)	J-6082-194-A	For extention of the VC-116 board (VC-116 board CN803 ⟷ AF-90 board W001)
	Extention cord (42P, 0.8 mm)	J-6082-240-A	For extention of the CD-85 board (CD-85 board CN101 ⟷ FP-530 board (CCD imager block))
J-10	Extention cord (4P)	J-6082-197-A	Mode selector IV conversion connector ⟷ Loading motor
J-11	Extention cord (6P)	J-6082-198-A	Mode selector IV conversion connector ⟷ MODE switch
J-12	Extention cord (20P, 0.8 mm)	J-6082-237-A	For extention cabinet (L) (SW-203 board) (SW-203 board CN361 ⟷ SA-49 board CN450) For extention of the CR-42 board (VI-122 board CN800 ⟷ CR-42 board CN001)
J-13	Extention cord (28P, 0.8 mm)	J-6082-238-A	For extention of the VC-119 board (VC-116 board CN603 ⟷ VC-119 board CN901)
J-14	Extention cord (32P, 0.8 mm)	J-6082-239-A	For extention of the SA-49 board (SA-49 board CN121 ⟷ CC-74 board (mechanism block))
J-15	Extention cord (6P, 0.8 mm)	J-6082-241-A	For extention of the camera block (VC-116 board CN751 ⟷ VI-122 board W800)
	Extention cord (13P, 0.8 mm)	J-6082-242-A	For extention of the camera block (VC-116 board CN801 ⟷ SA-49 board W451)
J-16	Conversion connector for mechanism deck	J-6082-167-A	For the mecha deck check

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: J-10 (J-6082-197-A) and J-11 (J-6082-198-A) are used together with the mode selector IV conversion connector (J-6082-167-A). For details of using the conversion connector (J-6082-167-A), refer to the 8 mm Video Mechanical Adjustment Manual (A Mechanism).

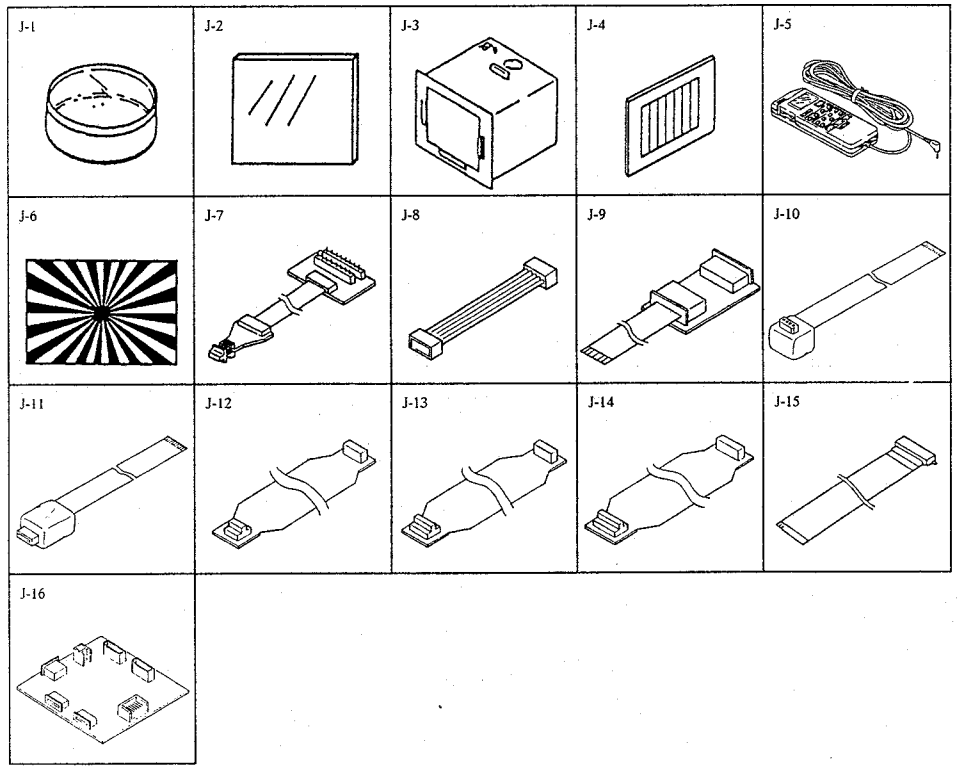


Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

1) Disconnect CN351 of MJ-35 board (MIC AMP).
2) Connect the equipments for adjustment as shown in Fig. 7-3.

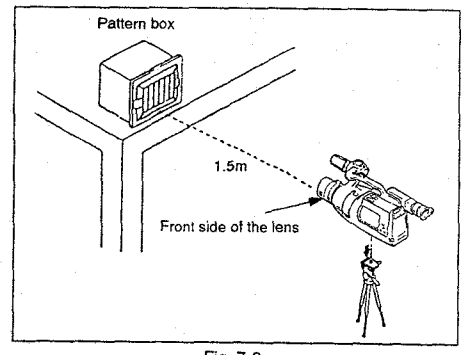


Fig. 7-2.

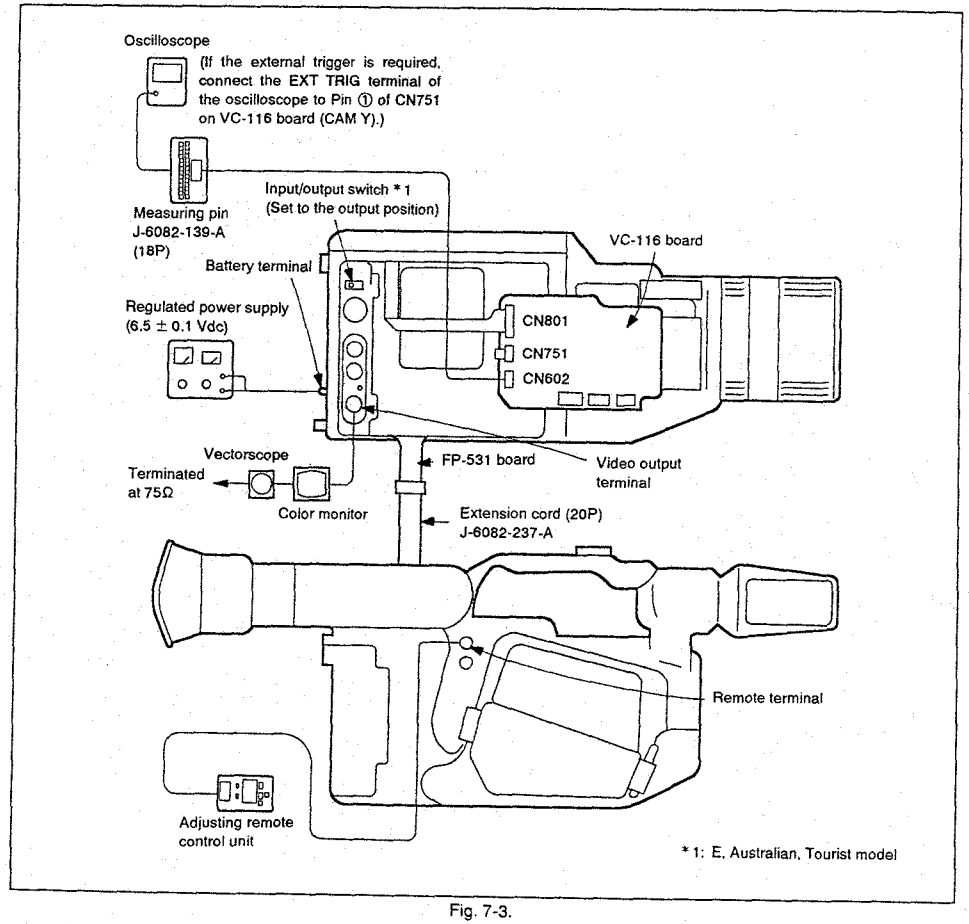

Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to Pin ① of CN751 on VC-116 board (CAM Y).)
Measuring pin J-6082-139-A (18P)
Input/output switch * 1 (Set to the output position)
Battery terminal
VC-116 board
Regulated power supply (6.5 ± 0.1 Vdc)
CN801
CN751
CN602
Vectorscope
Terminated at 75Ω
FP-531 board
Video output terminal
Color monitor
Extension cord (20P) J-6082-237-A
Remote terminal
Adjusting remote control unit
* 1: E, Australian, Tourist model

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Set the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/VTR power switch (VK-26 board S001) ·····Camera
2. Standby switch (SW-203 board S362)·····Standby
3. AUTO LOCK switch (CK-58 board S324)····· OFF
4. Input/output switchover switch (VI-122 board S800) (E, AUS, TR Model only)·····Output
5. FOCUS switch (CK-58 board S325)····· manual
6. PROGRAM AE button (FD-47 board S343)·····Off
7. IRIS button (FD-47 board S344) ····· Auto
8. SHUTTER SPEED button (FD-47 board S345)·····Off
9. GAIN button (FD-47 board S346) ····· Auto
10. WHITE BALANCE button (FD-47 board S347)····· Auto

Set the switches in the menu display to the following position.

1. ND SHUTTER ····· Auto
2. CUSTOM MODE ·····Off

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

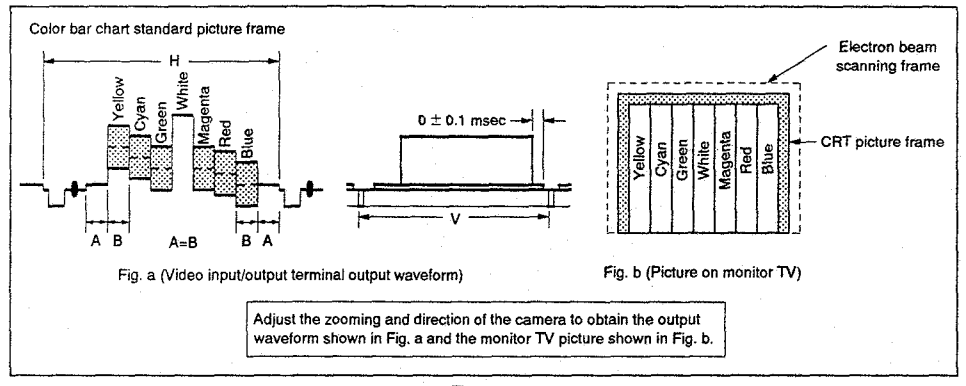


Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

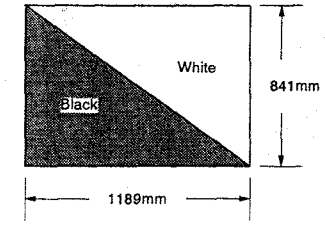


Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-116 board IC602, 752, 854, 901 and CD-85 board IC402, 512). These processes are carried out by the camera micro processor (VC-116 board IC801). This micro processor reads the data written in the non-volatile memory (VC-116 board IC804), and transmits it to the digital signal processing circuit and EVR.
The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.
The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (SW-203 board J361).
2) Set the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

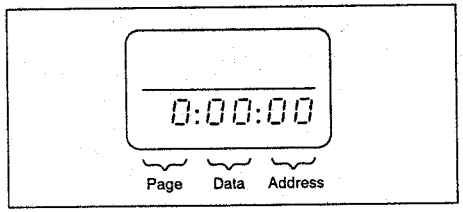


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (▶▶) button is pressed, and decrease when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, E page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F addresses 01 to EF, and the camera section (F page) can be adjusted.
   (To adjust the titler system (D page), adjust the data of page: 1, address: 00 to 01, and release the protect of page D.)
5) After completing all adjustments, turn off the main power (6.5V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.
Note 2: The adjustment data initial values are the values after performing "Page F, Page E Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data: Initial value	Adjustment data: Memo column
00	SET ID		28	28
01	NT PAL		00	00
02	FT SW		00	00
03	CHROMA LEVEL	Chroma level adjustment [Pin ⑱ of IC901]	AC	
04	R GAIN	[Pin ⑲ of IC901] } Pre-white balance adjustment	CA	
05	B GAIN	[Pin ② of IC901] } Pre-white balance adjustment	B2	
06	R–Y GAIN	[Pin ③ of IC901]	C8	
07	B–Y GAIN	[Pin ④ of IC901]	B9	
08	R–Y HUE	[Pin ⑤ of IC901]	CA	
09	B–Y HUE	[Pin ⑥ of IC901] } Color reproduction adjustment-1	BC	
0A	HIGHLIGHT REDUCE	[Pin ⑦ of IC901]	C0	C0
0B	IRIS REFERENCE	IRIS level adjustment [Pin ⑱ of IC854]	80	
0C	AGC REFERENCE	AGC adjustment [Pin ⑲ of IC854]	90	
0D	HALL GAIN	[Pin ② of IC854] } HALL adjustment	65	
0E	HALL OFFSET	[Pin ③ of IC854] } HALL adjustment	55	
0F	FADER MODE	[Pin ④ of IC854]	FF	FF
10	AE OFFSET	AE OFFSET adjustment [Pin ⑤ of IC854]	6C	
11	B VRAMP		80	
12	B VPARABOLA		80	
13	B HRAMP		80	80
14	B HPARABOLA		80	80
15	R VRAMP		80	80
16	R VPARABOLA		80	80
17	R HRAMP		80	80
18	R HPARABOLA		80	80
19	B VSUB	[Pin ④ of IC504]	6A	
1A	G VSUB	[Pin ⑤ of IC504] } VSUB adjustment	53	
1B	R VSUB	[Pin ⑥ of IC504] } VSUB adjustment	71	
1C	B RG	[Pin ⑦ of IC504]	83	
1D	G RG	[Pin ⑧ of IC504] } VRG adjustment	84	
1E	R RG	[Pin ⑨ of IC504] } VRG adjustment	68	
1F	B PREWHITE BALANCE	[Pin ⑤, ⑨ of IC402] } PRE GAIN , PRE WHITE BALANCE adjustment	6C	
20	R PREWHITE BALANCE	[Pin ⑥, ⑩ of IC402] } PRE GAIN , PRE WHITE BALANCE adjustment	82	
21	G GAIN PRESET	[Pin ⑦, ⑪ of IC402] PRE GAIN adjustment	9B	
22	R PEDESTAL	[Pin ⑱ of IC602]	80	80
23	G PEDESTAL	[Pin ⑲ of IC602]	80	80
24	B PEDESTAL	[Pin ② of IC602]	80	80
25	R PRE KNEE	[Pin ③ of IC602]	D0	D0
26	G PRE KNEE	[Pin ④ of IC602]	D0	D0

Table 7-2 (1).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
27	B PRE KNEE	[Pin ⑤ of IC602]	D0	D0
28	KNEE	[Pin ⑥ of IC602]	93	93
29	GAMMA	[Pin ⑦ of IC602]	FF	FF
2A	V APERTURE GAIN	[Pin ⑧ of IC602]	B2	B2
2B	Y DELAY LINE GAIN	V aperture adjustment [Pin ⑨ of IC602]	78	
2C	MAX GAIN	MAX gain adjustment [Pin ⑫ of IC602]	90	
2D	PRE WHITE CLIP	[Pin ⑬ of IC602]	FF	FF
2E	ZEBRA LEVEL	[Pin ⑱ of IC752]	99	
2F	SYNC LEVEL	SYNC level adjustment [Pin ⑲ of IC752]	E1	
30	WHITE CLIP	White clip adjustment [Pin ② of IC752]	E0	
31	Y LEVEL	Y level adjustment [Pin ③ of IC752]	E3	
32	SETUP	SET UP adjustment [Pin ④ of IC752]	B7	
33	SHARPNESS LEVEL	H aperture adjustment [Pin ⑤ of IC752]	C3	
34	BURST LEVEL	BURST level adjustment [Pin ⑥ of IC752]	A5	
35	R3200 H	3200K Red reference data MSB } Auto white balance preset adjustment	28	
36	R3200 L	3200K Red reference data LSB	00	
37	B3200 H	3200K Blue reference data MSB	18	
38	B3200 L	3200K Blue reference data LSB	00	
39	G3200 H	3200K Green reference data MSB	28	
3A	G3200 L	3200K Green reference data LSB	00	
3B	SHUT IN	Indoor decision shutter data } SHUTTER IN/OUT adjustment	A8	
3C	SHUT OUT	Outdoor decision shutter data	A0	
3D	IRIS IN	Indoor decision hole data } IRIS IN/OUT adjustment	79	
3E	IRIS OUT	Outdoor decision hole data	7F	
3F	BOTTOM SLP R	AWB adjusting frame bottom R coefficient	40	40
40	BOTTOM SLP BB	AWB adjusting frame bottom B coefficient	78	78
41	MIDDLE SLP R	AWB adjusting frame middle R coefficient	60	60
42	MIDDLE SLP B	AWB adjusting frame middle B coefficient	40	40
43	TOP SLP R	AWB adjusting frame top R coefficient	66	66
44	TOP SLP B	AWB adjusting frame top B coefficient	18	18
45	KEIKO R	AWB adjusting frame fluorescent lamp R coefficient	66	66
46	KEIKO B	AWB adjusting frame fluorescent lamp B coefficient	18	18
47	BOTTOM UP	AWB adjusting frame bottom upper limit	BC	
48	BOTTOM DOWN	AWB adjusting frame bottom lower limit	94	
49	MIDDLE UP	AWB adjusting frame middle upper limit	AF	AF
4A	MIDDLE DOWN	AWB adjusting frame middle lower limit	96	96
4B	TOP UP	AWB adjusting frame top upper limit	78	78
4C	TOP DOWN	AWB adjusting frame top lower limit	60	
4D	KEIKO	AWB adjusting frame fluorescent lamp output lower limit	6C	
4E	KEIKO DOWN	AWB adjusting frame fluorescent lamp lower limit	5C	
4F	R TOP LMT	AWB adjusting frame, upper limit of Rcont	68	68
50	R DWN LMT	AWB adjusting frame, lower limit of Rcont	20	20
51	B TOP LMT	AWB adjusting frame, upper limit of Bcont	83	83
52	B IN TOP	AWB indoor adjusting frame, upper limit of Bcont	67	67

Table 7-2 (2).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
53	B IN MAX	AWB indoor output frame, upper limit of Bcont	5C	
54	B OUT MIN	AWB outdoor adjusting frame, lower limit of Bcont	5C	5C
55	B OUT DOWN	AWB outdoor output frame, lower limit of Bcont	4A	4A
56	B DWN LMT	AWB adjusting frame, lower limit of Bcont	26	26
57	11 LMT	Low luminance limiter	06	06
58	T M DIVID	AWB adjusting frame, dividing limit of top and middle	5E	5E
59	B M DIVID	AWB adjusting frame, dividing limit of middle and bottom	3C	
5A	DELAY TIME	AWB tracking speed	10	10
5B	B IN MIN	AWB indoor output frame, lower limit of Bcont	38	
5C	OUT HYS OFF	AWB outdoor hysteresis off difference	0C	0C
5D	OUT B HYS	AWB outdoor hysteresis amount	06	06
5E	AWB MODE	AWB mode	00	00
5F	LANC R H		00	00
60	LANC R L		00	00
61	LANC B H		00	00
62	LANC B L		00	00
63	NORM R ND OFF	ND: OFF Red normalized correction coefficient } Auto white balance correction value adjustment	80	
64	NORM R ND ON	ND: ON Red normalized correction coefficient	80	
65	NORM B ND OFF	ND: OFF Blue normalized correction coefficient	80	
66	NORM B ND ON	ND: ON Blue normalized correction coefficient	80	
67	OFFSET R	ND: ON Red offset } Auto white balance preset adjustment	00	
68	OFFSET R+1		00	
69	OFFSET B	ND: ON Blue offset	00	
6A	OFFSET B+1		00	
6B	TRANGENT	ND correction transient	00	00
6C	AGC OUT	Outdoor decision AGC data } AGC IN/OUT adjustment	00	
6D	AGC IN	Indoor decision AGC data	00	
6E	FAST TIME	AWB initial high speed tracking rate	40	40
6F	R IN MAX	Red output maximum	48	48
70	AE FUNCTION	AE function ON/OFF SW	00	00
71	IRIS DATA	Manual iris adjustment manual iris setting value (F5.6) [IC854 ⑫]	B5	
72	GAIN M3	Manual Gain setting value (–3 dB) [IC854 ⑬]	00	00
73	GAIN 0	Manual Gain setting value (0dB) [IC854 ⑬]	40	40
74	GAIN 9	Manual Gain setting value (9dB) [IC854 ⑬] } Manual gain adjustment	80	
75	GAIN 18	Manual Gain setting value (18 dB) [IC854 ⑬]	F0	
76	IRIS IMIT	Auto shutter iris limit setting value	D0	D0
77	IRIS IMIT_HYS	Auto shutter hysteresis setting value	03	03
78	IRIS IMIT_THR	Auto shutter threshold setting value	10	10
79	IRIS OPEN	Program AE iris open setting value	20	20
7A	SHUT COUNT 1	Shutter UP/DOWN counter-1	07	07
7B	SHUT COUNT 2	Shutter UP/DOWN counter-2	03	03
7C	AE REF NOR	Standard AE level adjustment iris priority reference value	80	
7D	AE REF SP	Portrait reference value	10	10
7E	AE REF PO	Sports reference value	10	10

Table 7-2 (3).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
7F	AE REF HYS	Standard operation mode hysteresis	08	08
80	AE REF THR	Standard operation mode threshold	10	10
81	AE REF TURBO	High speed operation mode setting value	30	30
82	AE TURBO HYS	High speed operation mode hysteresis setting value	08	08
83	AE TURBO THR	High speed operation mode threshold setting value	10	10
84	EMG AE	Alarm flag AE level setting value	10	10
85	EMG AE HYS	Manual gain adjustment alarm flag hysteresis setting value	08	08
86	EMG AGC	Alarm flag AGC level setting value	80	
87	EMG AGC HYS	Alarm flag hysteresis setting value	08	08
88	B DELTA PRE GAIN	Bch PreWB Gain UP adjustment [IC402⑥, ⑨] (DELTA PRE GAIN adjustment)	70	
89	R DELTA PRE GAIN	Rch PreWB Gain UP adjustment [IC402⑤, ⑧] (DELTA PRE GAIN adjustment)	80	
8A	G DELTA PRE GAIN	Gch PreWB Gain UP adjustment [IC402⑦, ⑫] (DELTA PRE GAIN adjustment)	A0	
8B	SHUT HOSEI LIM	PreWB Gain UP level setting [IC402⑤ to ⑫]	40	40
8C	DELTA SHUT GAIN	Shutter Gain 1step modification amount (1)	04	04
8D	DELTA SHUT GAIN 2	Shutter Gain 1step modification amount (2)	08	08
8E	ND IN ALARM	ND alarm (in) side setting	CA	CA
8F	ND OUT ALRAM	ND alarm (out) side setting	5A	5A
90	ND ALARM HYS	ND alarm (in) side hysteresis setting	04	04
91	ND ALARM HYS2	ND alarm (out) side hysteresis setting	08	08
92	SLOW SHUTTER	Low speed shutter speed setting	FB	FB
93	ND COUNTER	ND time out setting	80	80
94	AUTO SHUT MAX SW	Autoshut MAX value arbitrary setting	00	00
95	ND AUTO IN	Auto ND mode IN setting	00	00
96	ND AUTO OUT	Auto ND mode OUT setting	00	00
97	SHUTTER GAIN 1	For inspection	00	00
98	SHUTTER GAIN 2	For inspection	00	00
99	TRACK COMP WIDE	Wide track comp steps (Flange back adjustment)	00	
9A	START STEP	Steps ph to inf (Flange back adjustment)	A0	
9B	LENZ TELE H	Upper zoom stop tele (Flange back adjustment)	0F	
9C	LENZ TELE H+1	Lower zoom stop tele (Flange back adjustment)	00	
9D	LENZ WIDE H	Upper zoom wide (Flange back adjustment)	01	
9E	LENZ WIDE H+1	Lower zoom wide (Flange back adjustment)	00	
9F	TRACK COMP TELE	Tele track comp steps (Flange back adjustment)	00	
A0	PSD NEAR	(Flange back adjustment)	60	
A1	PSD MID	(Flange back adjustment)	30	
A2	PSD FAR	(Flange back adjustment)	00	
A3	AF HALL THR		C8	C8
A4	AF IRIS INDOOR		B4	B4
A5	FA W H		02	02
A6	FA W H+1		02	02
A7	FA B		10	10
A8	FH W H		02	02
A9	FH W H+1		05	05
AA	FH B		2C	2C

Table 7-2 (4).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
AB	FH REF		48	48
AC	FOCUS INIT THR		01	01
AD	FB ZOOM COMP TELE	Track comp position (t)	0C	0C
AE	FB ZOOM COMP WIDE	Track comp position (w)	04	04
AF	ZOOM HANT SPEED		20	20
B0	WIDE LIMIT H		00	00
B1	WIDE LIMIT H+1		00	00
B2	TELE LIMIT H		0F	0F
B3	TELE LIMIT H+1		FF	FF
B4	S LANC DRIVE		80	80
B5	LANC WIDE		2E	2E
B6	LANC TELE		C0	C0
B7	FORCE SPEED		02	02
B8	ZOOM MINI SPEED	flag bits	FD	FD
B9	FB ZOOM SERVO DATA		FF	FF
BA	EMERGENCE KEIKOKU EN1		00	00
BB	COMMAND MODE		00	00
BC	ADJUST MODE		00	00
BD	ABS POSITION H		00	00
BE	ABS POSITION H+1		00	00
BF	OUT OF GEAR		B0	B0
C0	AD AGC THR	Display modification threshold	C0	C0
C1	ND R-Y GAIN	[Pin ③ of IC901] (Color reproduction adjustment-2)	C8	
C2	ND B-Y GAIN	[Pin ④ of IC901] (Color reproduction adjustment-2)	B9	
C3	ND R-Y HUE	[Pin ⑤ of IC901] (Color reproduction adjustment-2)	CA	
C4	ND B-Y HUE	[Pin ⑥ of IC901] (Color reproduction adjustment-2)	BC	
C5	Y R GAIN	[Pin ⑥ of IC854]	CA	CA
C6	Y B GAIN	[Pin ⑧ of IC854]	CA	CA
C7	Y G GAIN	[Pin ⑦ of IC854]	CA	CA
C8	SHUT IN ND		00	
C9	SHUT OUT ND		00	
CA	IRIS IN ND		00	
CB	IRIS OUT ND		00	
CC	IN OUT ND		01	
CD	OFFSET GAIN		60	60
CE	OP R UP	[Pin ⑧ of IC901] (ONE-PUSH Auto white balance)	B0	
CF	OP R DOWN	[Pin ⑨ of IC901] (ONE-PUSH Auto white balance)	18	
D0	OP B DOWN	[Pin ⑬ of IC901] (ONE-PUSH Auto white balance)	15	
D1	DISPLAY MODE		FF	FF
D2	JIG PAGE		22	22
D3	JIG PAGE+1		00	00
D4	JIG PAGE+2		00	00
D5	JIG0 0	A1 FT16+1	D7	D7
D6	JIG 0+1	A1 FT16	D6	D6

Table 7-2 (5).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
D7	JIG 0+2	A0 step H+1	1E	1E
D8	JIG 0+3	A0 step H	1D	1D
D9	JIG 0+4		00	00
DA	JIG 0+5		00	00
DB	AGC1	Carrier balance adjustment 1 (ch 9) [Pin ② of IC402]	60	
DC	AGC2	Carrier balance adjustment 2 (ch 10) [Pin ③ of IC402]	60	
DD	AGC3	Carrier balance adjustment 3 (ch 11) [Pin ④ of IC402]	60	
DE	C14 R ADJ	Onepush C14: R adjust	80	
DF	C14 B ADJ	Onepush C14: B adjust	80	
E0	STAND ALONE SW		00	00
E1	SHUTTER CODE		00	00
E2	IRIS CODE		00	00
E3	AE MODE		00	00
E4	WB MODE		00	00
E5	CCD DET		00	00
E6			00	00
E7			00	00
E8			00	00
E9			00	00
EA	FACTORY 1	Temporary recording area (Write protect invalid) Not related to unit operations.	00	
EB			00	
EC			00	
ED			00	
EE			00	
EF			00	
F0	FACTORY 2	Area for factory adjustments (Write protect valid) Not related to unit operations.		
F1				
F2				
F3				
F4				
F5				
F6				
F7				
F8				
F9				
FA				
FB				
FC				
FD				
FE				
FF				

Table 7-2 (6).

7-1-6. Page E Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F, Page E Data Initialization". They are different from the value after performing all the adjustment.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00			0E	0E
01			06	06
02			06	06
03			06	06
04			07	07
05			07	07
06			05	05
07			06	06
08			05	05
09			05	05
0A			05	05
0B			07	07
0C			00	00
0D			00	00
0E			00	00
0F			00	00
10		Bch CCD imager (FP-530 board IC001) Correction data	00	
11			00	
12			00	
13			00	
14			00	
15			00	
16			00	
17			00	
18			00	
19			00	
1A			00	
1B			00	
1C			00	
1D			00	
1E			00	
1F		Gch CCD imager (FP-530 board IC101) Correction data	00	
20			00	
21			00	
22			00	
23			00	
24			00	
25			00	
26			00	

Table 7-3 (1).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
27		Gch CCD imager (FP-530 board IC101) Correction data	00	
28			00	
29			00	
2A			00	
2B			00	
2C			00	
2D			00	
2E		Rch CCD imager (FP-530 board IC201) Correction data	00	
2F			00	
30			00	
31			00	
32			00	
33			00	
34			00	
35			00	
36			00	
37			00	
38			00	
39			00	
3A			00	
3B			00	
3C			00	

Table 7-3 (2).

7-1-7. 6 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6. (These page data can be set temporary, but when the main power (6.5V) is turned off, the original value (normal value) will be returned.

Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera protect release mode is set by setting data: 01 to page: 6, address: 00.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	00	Protect ON (Normal)
		01	Release of protect (Address: 01 to EF of page: F)
		11	Release of protect
		80	Release of protect (Page: F, E)
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00	Normal
		01	IRIS OPEN1
		03	IRIS CLOSE 1
		09	PREGAIN adjustment
		0B	DELTA PREGAIN adjustment
		0D	ND 0.5 SHUTTER (IRIS IN/OUT adjustment)
		0F	ND 0.8 SHUTTER (IRIS IN/OUT adjustment)
		11	ND 0.5 SHUTTER (AGC IN/OUT adjustment)
		13	ND 0.8 SHUTTER (AGC IN/OUT adjustment)
		15	AE IRIS
		17	AWB PRESET 1
		19	AWB PRESET 2
		1B	ND AWB PRESET 1
		1D	ND AWB PRESET 2
		1F	WB 3200
		21	ND WB 3200
		23	Flangeback adjustment 1
		25	Flangeback adjustment 2
		29	IRIS F5.6
		2B	SHUTTER 4000
		41	EEPROM PRE WRITE: Page F, Page E initial data write
02	DDS display switch	00	Normal
		01	HALL level display
		02	AGC level display
		03	AE level display
		04	SHUTTER display
		05	Shut 8 bit display
		06	R ratio display
		07	B ratio display
		08	ZOOM POSITION display
		0A	new FA, FA/FH display
		0C	PDS level display
03	Camera adjustment switch	00	Normal (center on)
		03	Center weighting off
		80	Chroma level
11 ★	COMPLEATED FLAG	00	Camera adjustment not completed
		01	Camera adjustment completed
12	Shutter speed switch	00	SHUTTER OFF
		0A	SHUTTER 1/300
		13	SHUTTER 1/1500
14	Shutter, Iris, Gain auto/manual switch	00	Normal
		03	GAIN manual
		CF	SHUTTER, IRIS, GAIN manual

Table 7-4 (1).

Address	Adjustment Mode	Data	Function
15	Iris, Gain switch	00 80 88 C8	IRIS: auto, GAIN: auto IRIS: auto, GAIN: +9dB IRIS: F6.8, GAIN: +9dB IRIS: F6.8, GAIN: +15dB
17	White balance mode switch	00 01	WB AUTO WB INDOOR
1A	Test auto shutter switch	00 01	Normal Test auto shutter on

Addresses with ★ are exclusively for reading.

Table 7-4 (2).

7-1-8. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN602 of the VC-116 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN602.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	V-SUB (B)	2	V-SUB (G)
3	V-SUB (R)	4	RG (B)
5	RG (G)	6	RG (R)
7	CCD OUT	8	AGC CONT
9	GND	10	NC
11	NC	12	NC
13	G	14	B
15	R	16	G OUT
17	NC	18	DTL OUT

Table 7-5.

7-1-9. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (あ)	B (い)	C (う)	D (え)	E (お)	F (か)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (あ)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B (い)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (う)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (え)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (お)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (か)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

② (D column) ① (B row)

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (い え).
As the upper digit of the hexadecimal notation is B (い), and the lower digit is D (え), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check

Subject	Option
Measuring instrument	Digital voltmeter
CAM 4.9V check	
Measurement point	Pin ② of CN601 on VC-116 board
Specified value	4.9 ± 0.15 Vdc
AF 4.9V check	
Measurement point	Pin ① of CN003 on AF-90 board
Specified value	4.9 ± 0.2 Vdc
4.9V check	
Measurement point	Pin ④ of CN104 on CD-85 board
Specified value	4.9 ± 0.15 Vdc
–8.5V check	
Measurement point	Pin ③ of CN104 on CD-85 board
Specified value	–8.5 ± 0.45 Vdc
15V check	
Measurement point	Pin ② of CN104 on CD-85 board
Specified value	15.0 ± 0.45 Vdc
23V check	
Measurement point	Pin ① of CN104 on CD-85 board
Specified value	23.1 ± 0.45 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F, Page E Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F and page E has been initialized.

Initializing method:

1) Release the protect.
   Page: 6, address: 00, data: 80.
2) Check that the data of page: 6, address: 11 is 00.
   (Display indicating that page F and page E data can be initialized)
3) Set data: 41 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F and page E data initialization execution. The data of all addresses of page F and page E will be initialized.)
4) Check that the data of page: 6, address: 11 is 01.
   (Displays that the initialization of page F and page E data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
   (Releases the page F, page E data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F, page E).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (SET ID)	28
03 (CHROMA LEVEL)	AC
0B (IRIS REF)	80
0C (AGC REF)	90
22 (R PEDESTAL)	80
23 (G PEDESTAL)	80
24 (B PEDESTAL)	80
25 (R PREKNEE)	D0
26 (G PREKNEE)	D0
27 (B PREKNEE)	D0
28 (KNEE)	93
2C (MAX GAIN)	90
31 (Y LEVEL)	E3

4. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	E
Adjustment Address	Bch (FP-530 board IC001) 10 to 1E Gch (FP-530 board IC101) 1F to 2D Rch (FP-530 board IC201) 2F to 3C

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera EEPROM (VC-116 board IC804).
3. When the page E data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 10 to 1E (Bch correction data) and 1F to 2D (Gch correction data) and 2F to 3C (Rch correction data) to "00".

In the case of 2 and 3, write the correction data attached to the lens block to addresses 10 to 1E (Bch correction data) and 1F to 2D (Gch correction data) and 2F to 3C (Rch correction data).

If the correction data are not attached, adjust all data of addresses10 to 1E (Bch correction data) and 1F to 2D (Gch correction data) and 2F to 3C (Rch correction data) to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 80
2) Write the correction data to page: E, addresses: 10 to 1E (Bch correction data) and 1F to 2D (Gch correction data) and 2F to 3C (Rch correction data).
   Note: To perform write to the EEPROM (non-volatile memory), press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the lens block.

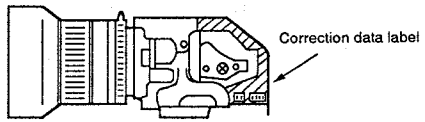


Fig. 7-7.

5. SYNC Level Adjustment (VC-116 board)

Subject	Not required
Measurement Point	Pin ① of CN751 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	2F (SYNC LEVEL)
Specified Value	A=140 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE 1 mode setting)
3) Change the data of page: F, address: 2F, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE 1 mode)

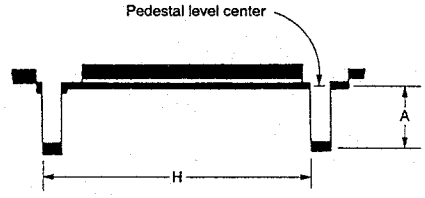


Fig. 7-8.

6. SET UP Adjustment (VC-116 board)

Subject	Not required
Measurement Point	Pin ① of CN751 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	32 (SET UP)
Specified Value	A=15 ± 5mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE 1 mode setting)
3) Change the data of page: F, address: 32, and adjust so that the SET UP level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE 1 mode).

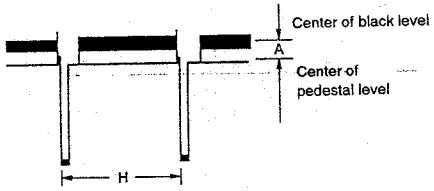
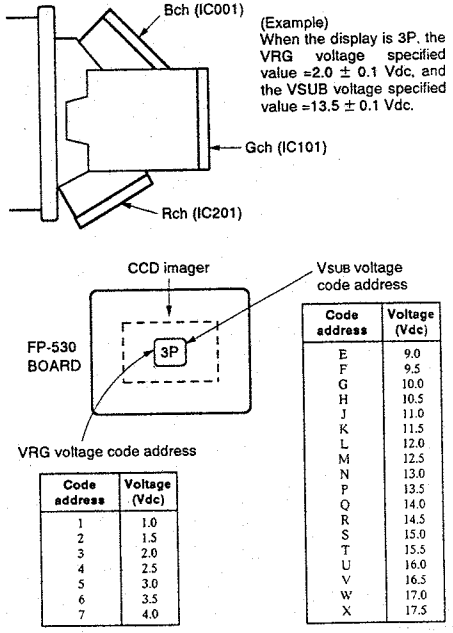


Fig. 7-9.

7. V SUB Adjustment (VC-116 board)

Subject	Not required
Measurement Point	Bch (FP-530 board IC001): Pin ① of CN602 (V SUB (B)) Gch (FP-530 board IC101): Pin ② of CN602 (V SUB (G)) Rch (FP-530 board IC201): Pin ③ of CN602 (V SUB (R))
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	Bch: 19 (B VSUB) Gch: 1A (G VSUB) Rch: 1B (R VSUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 19 (Bch) or 1A (Gch) or 1B (Rch), and adjust the voltage of pin ① (Bch) or pin ② (Gch) or pin ③ (Rch) of CN602 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.


Bch (IC001)
(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.
Gch (IC101)
Rch (IC201)
CCD imager
VSUB voltage code address
FP-530 BOARD
3P
VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

Code address	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5

Fig. 7-10.

8. VRG Adjustment (VC-116 board)

Subject	Not required
Measurement Point	Bch (FP-530 board IC001): Pin ④ of CN602 (RG (B)) Gch (FP-530 board IC101): Pin ⑤ of CN602 (RG (G)) Rch (FP-530 board IC201): Pin ⑥ of CN602 (RG (R))
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	Bch: 1C (B RG) Gch: 1D (G RG) Rch: 1E (R RG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 1C (Bch) or 1D (Gch) or 1E (Rch), and adjust the voltage of pin ④ (Bch) or pin ⑤ (Gch) or pin ⑥ (Rch) of CN602 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

9. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0D (HALL GAIN) 0E (HALL OFFSET)
Specified Value	01 to 05 during IRIS OPEN FC to FE during IRIS CLOSE

Note 1: Hall output data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 01 to page: 6, address: 02.
   (HALL output display mode setting)
3) Set data: 30 to page: F, address: 0D, and press the PAUSE button of the adjusting remote control unit.
4) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE 1 mode setting)
5) Read the DDS display data (W_2). W_2 should be below "FE". If W_2 is "FF", change the data of page: F, address: 0E, and adjust so that the DDS display data (W_2) becomes below "FE".
6) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
7) Read the DDS display data (K_2). K_2 should be over "01". If K_2 is "00", change the data of page: F, address: 0E, and adjust so that the DDS display data (K_2) becomes over "01" and perform steps 4) to 6).
8) Set data: 10 to page: F, address: 0D, and press the PAUSE button.
9) Read the DDS display data (K_1).
10) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE 1 mode setting)
11) Read the DDS display data (W_1).
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \quad \text{Equation 1}$$

$$B' = W_2' - K_2' \quad \text{Equation 2}$$

$$X_1' = \frac{8000 + (48 \times A') - (32 \times B')}{A'} \quad \text{Equation 3}$$

14) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 0D, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 0E, and adjust so that the DDS display data becomes "FC" to "FE".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
19) Check that the DDS display data is "01" to "05".

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

10. Manual Iris Adjustment

Subject	Not required
Measurement Point	DDS dispaly of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	71 (IRIS DATA)
Specified Value	BB to BD

Note 1: Hall output data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 29 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS 5, 6 mode setting)
3) Set data: 01 to page: 6, address: 02.
   (Hall output display mode setting)
4) Change the data of page: F, address: 71, and adjust so that the DDS display data becomes "BB" to "BD".
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing Adjustment
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

11. AE OFFSET Adjustment

Subject	Not required
Measurement Point	DDS dispaly of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	10 (AE OFFSET)
Specified Value	01 to 07

Note 1: AE level data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE 1 mode setting)
3) Set data: 03 to page: 6, address: 02.
   (AE level display mode setting)
4) Change the data of page: F, address: 10, and adjust so that the DDS display data becomes "01" to "07".
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustment
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

12. IRIS Level Adjustment (VC-116 board)

Subject	Color bar standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin ⑦ of CN602 (CCD OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	0B (IRIS REF)
Specified Value	A=135 ± 10 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Without attaching and ND filter, change the data of page: F, address: 0B, and adjust so that the CCD OUT signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Attach the ND filter 0.5 (0.4+0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
6) Remove the ND filter and confirm that the signal level (A) is 135 ± 10 mV.

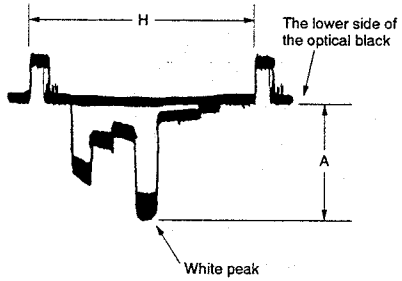


Fig. 7-11.

13. Standard AE Level Setting

Subject	Color bar chart standard picture frame
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	7C (AE REF NOR)

Note 1: AE level data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 03 to page: 6, address: 02.
   (AE level display mode setting)
4) Read the DDS display data, and set the data to page: F, address: 7C.
5) Press the PAUSE button of the adjusting remote control unit.

14. AGC Tracking Adjustment (VC-116 board)

Subject	White pattern standard picture frame
Measurement Point	Video out terminal
Measuring Instrument	Vectorscope
Adjustment Element	RV601, RV602

Note: The video out terminal should be terminated at 75Ω .

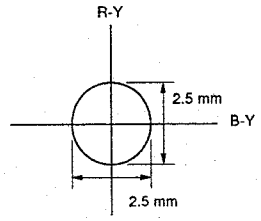
Adjusting method:

1) Press the WHITE BALANCE button, and set up the WHITE BALANCE HOLD mode.
2) Press the ONE PUSH WHITE BALANCE (◪) button, and check that the center of the white luminance point displayed on the vectorscope is within a circle 1.
3) Set data: C7 to page: 6, address: 14.
   (SHUTTER, AGC MANUAL mode setting)
4) Set data: 06 to page: 6, address: 12.
   (SHUTTER 1/150 mode setting)
5) Set data: 88 to page: 6, address: 15.
   (IRIS F6•8, GAIN +9dB mode setting)
6) Adjust RV601 and RV602 alternately so that the center of the white luminance point displayed on the vectorscope is within a circle 1.
7) Set data: 09 to page: 6, address: 12.
   (SHUTTER 1/250 mode setting)
8) Set data: C8 to page: 6, address: 15.
   (IRIS F6•8, GAIN +15dB mode setting)
9) Adjust RV601 and RV602 alternately so that the center of the white luminance point displayed on the vectorscope is within a circle 2.
10) Set data: 06 to page: 6, address: 12.
    (SHUTTER 1/150 mode setting)
11) Set data: 88 to page: 6, address: 15.
    (IRIS F6•8, GAIN +9dB mode setting)
12) Check that the center of the white luminance point displayed on the vectorscope is within a circle 1. If not, repeat steps 6) to 12).

Processing after completing adjustment

1) Set data: 00 to page: 6, address: 12.
   Set data: 00 to page: 6, address: 14.
   Set data: 00 to page: 6, address: 15.
   (Release of SHUTTER, AGC MANUAL mode)

Circle 1



Circle 2

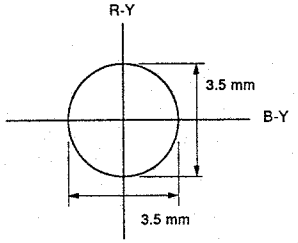


Fig. 7-12.

15. PRE GAIN Adjustment –1 (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ⑬ of CN602 (G LPF OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	21 (G GAIN PRESET)
Specified Value	A=270 ± 10 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjsuting remote control unit.
   (PRE GAIN adjustment mode setting)
4) Change the data of page: F, address: 21, and adjust the G LPF OUT level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.
6) Perform the PRE GAIN adjustment –2.

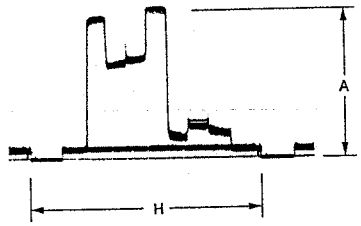


Fig. 7-13.

16. PRE GAIN Adjustment –2 (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ⑮ of CN602 (R LPF OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	20 (R PREWHITE BALANCE)
Specified Value	A=270 ± 10 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03.
3) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (PRE GAIN adjustment mode setting)
4) Change the data of page: F, address: 20, and adjust the R LPF OUT level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.
6) Perform the PRE GAIN adjustment –3.

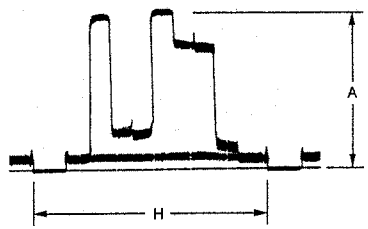


Fig. 7-14.

17. PRE GAIN Adjustment –3 (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ⑭ of CN602 (B LPF OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	IF (B PRE WHITE BALANCE)
Specified Value	A=270 ± 10 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03.
3) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (PRE GAIN adjustment mode setting)
4) Change the data of the page: F, address: IF, and adjust the B LPF OUT level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the PRE GAIN adjustment mode)

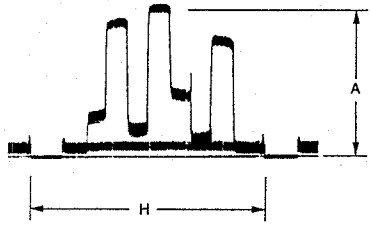


Fig. 7-15.

18. AGC Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AGC REF)
Specified Value	D=X ± 1

Note 1: AGC level data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (PRE GAIN adjustment mode setting)
4) Set data: 02 to page: 6, address: 02.
   (AGC level display mode setting)
5) Read the DDS display data (X), and memorizing this data (X).
6) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200 mode setting)
7) Memorizing the data of page: F, address: 2C.
8) Set data: 90 to page: F, address: 2C, and press the PAUSE button of the adjusting remote control unit.
   (MAX GAIN intial data setting)
9) Change the data of page: F, address: 0C, and adjust so that the DDS display data (D) becomes X ± 1.
10) Press the PAUSE button of the adjusting remote control unit.

Precessing after completing adjustments
1) Set the data memorized at step 7) to page: F, address: 2C, and press the PAUSE button of the adjusting remote control unit.

19. V Aperture Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ⑫ of CN602 (DTL OUT)
Measuring Instrument	Osilloscope
Adjustment Page	F
Adjustment Address	2B (Y DELAY LINE GAIN)
Specified Value	A=0 ± 5 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03.
3) Change the data of page: F, address: 2B, and adjust the DTL OUT signal level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

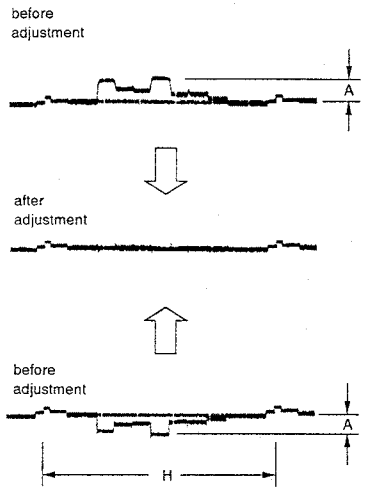


Fig. 7-16.

20. White Clip Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ① (Y OUT) of CN751
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	30 (WHITE CLIP)
Specified Value	A=420 ± 10 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
4) Set data: FF to page: F, address: 31, and press the PAUSE button of the adjusting remote control unit.
   (Maximum Y level setting)
5) Change the data of page: F, address: 30, and adjust so that the Y level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustment
1) Set the data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)
2) Perform "Y Level Adjustment".

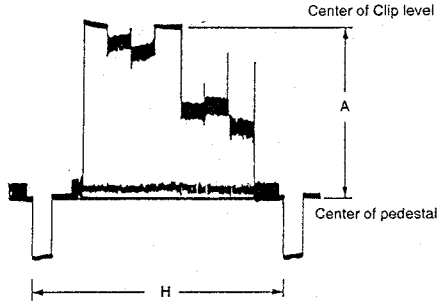


Fig. 7-17.

21. Y Level Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ① of CN751 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	31 (Y LEVEL)
Specified Value	A=265 ± 5 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200 mode setting)
4) Change the data of page: F, address: 31, and adjust so that the Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

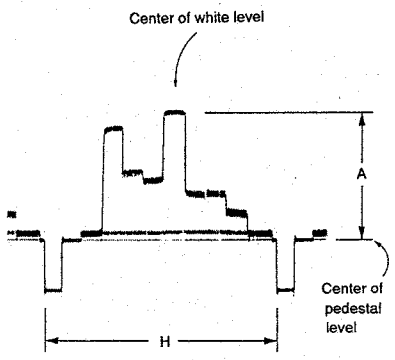


Fig. 7-18.

22. H Aperture Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ① of CN751 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	33 (SHP LEVEL)
Specified Value	A=50 ± 5 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200 mode setting)
4) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
5) Change the data of page: F, address: 33, and adjust so that the projections between the all black and yellow become A=50 ± 5 mV the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

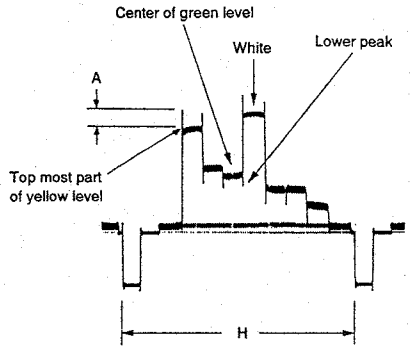


Fig. 7-19.

23. Max. Gain Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (one) and 0.9 (two)
Measurement Point 1	Pin ① of CN751 (Y OUT)
Measuring Instrument 1	Oscilloscope
Measurement Point 2	DDS dispaly of EVF or monitor TV[Note 1]
Measuring Instrument 2	
Adjustment Page	F
Adjustment Address	2C (MAX GAIN), 0C (AGC REF)
Specified Value	A=110 ± 5 mV D=X ± 1

Note 1: AGC level data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200 mode setting)
4) Set data: 02 to page: 6, address: 02.
   (AGC level display mode setting)
5) With out attaching an ND filter, read the DDS display data (X), and memorizing this data (X).
6) Attach the ND filter 2.8 (1.0+0.9+0.9) to the front of the lens.
7) Change the data of page: F, address: 2C, and adjust so that the Y signal level (A) becomes the specified value.
8) Press the PAUSE button of the adjusting remote control unit.
9) Remove the ND filter.
10) Change the data of page: F, address: 0C, and adjust so that the DDS display data (D) becomes X ± 1.
11) Press the PAUSE button of the adjusting remote control unit.

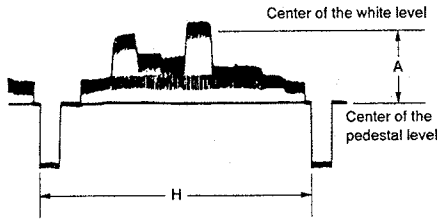


Fig. 7-20.

24. MANUAL GAIN Adjustment (VC-116 board)

Subject	Color bar chart standard picture frame
Filter	ND filter 1.0 (one) and 0.9 (two)
Measurement Point 1	DDS display of EVF on monitor TV[Note 1]
Measuring Instrument 1	
Measurement Point 2	Pin ① of CN751 (Y OUT)
Measuring Instrument 2	Oscilloscope
Adjustment Page	F
Adjustment Address	75 (GAIN 18), 74 (GAIN 9), 86 (EMG AGC)
Specified Value	A=65 ± 5 mV

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200 mode setting)
4) Set data: 02 to page: 6, address: 02.
   (AGC level display mode setting)
5) Attach the ND filter 2.8 (1.0+0.9+0.9) to the front of the lens.
6) Read the DDS display data (D).
7) Set the data (D) to page: F, address: 75, and press the PAUSE button.
8) Set data: 03 to page: 6, address: 14.
   (Test program AE-gain manual mode setting)
9) Set data: 80 to page: 6, address: 15.
   (Test Iris code-Gain +9 dB mode setting)
10) Change the data of page: F, address: 74, and adjust so that the Y signal level (A) becomes the specified value.
11) Press the PAUSE button of the adjusting remote control unit.
12) Set the same data as address: 74 to page: F, address: 86, and press the PAUSE button.

Processing after completing adjustment
1) Set data: 00 to page: 6, address: 14, and press the PAUSE button of the adjusting remote control unit.
2) Set data: 00 to page: 6, address: 15, and press the PAUSE button.
3) Remove the ND filter.

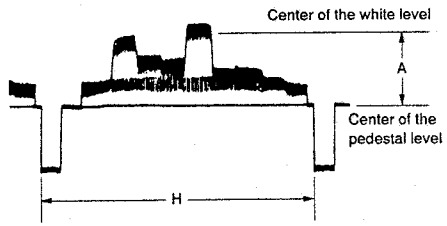


Fig. 7-21.

31. Auto White Balance Preset Adjustment (VC-116 board)

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	35 (R3200 H), 36 (R3200 L), 37 (B3200 H), 38 (B3200 L), 39 (G3200 H), 3A (G3200 L), 67 (OFFSET R), 68 (OFFSET R+1), 69 (OFFSET B), 6A (OFFSET B+1)

Note: The adjustment data is automatically input to page: F, address: 35 to 3A and 67 to 6A.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 17 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (AWB PRESET 1 mode setting)
4) Wait at least for 5 seconds.
5) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (AWB PRESET 2 mode setting)
6) Wait at least for 3 seconds.
7) Set data: 1B to page: 6, address: 01, and press the PAUSE button of the adjsuting remote control unit.
   (ND AWB PRESET 1 mode setting)
8) Wait at least for 5 seconds.
9) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND AWB PRESET 2 mode setting)
10) Wait at least for 3 seconds.

Processing after completing adjustment

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of AWB PRESET mode)

32. Auto White Balance Correction Value Adjustment –1 (VC-116 board)

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	63 (NORM R ND OFF), 65 (NORM B ND OFF), 64 (NORM R ND ON), 66 (NORM B ND ON)
Specified Value	R ratio: 2A60 to 2AE0 B ratio: 5840 to 58C0

Note 1: R ratio data or B ratio data is the bottom four digits of the display data.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 1F to page: 6, address: 01, and press the PAUSE button of the adjsuting remote control unit.
   (WB 3200 mode setting)
5) Set data: 06 to page: 6, address: 02.
   (R ratio display mode setting)
6) Attach the C14 filter to the front of the lens.
7) Change the data of page: F, address: 63, and adjust so that the DDS display data is "2A60" to "2AE0".
8) Press the PAUSE button of the adjusting remote control unit.
9) Set data: 07 to page: 6, address: 02.
   (B ratio display mode setting)
10) Change the data of page: F, address: 65, and adjust so that the DDS display data is "5840" to "58C0"
11) Press the PAUSE button of the adjusting remote control unit.
12) Set data: 21 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (ND WB 3200 mode setting)
13) Change the data of page: F, address: 66, and adjust so that the DDS display data is "5840" to "58C0".
14) Press the PAUSE button of the adjusting remote control unit.
15) Set data: 06 to page: 6, address: 02.
    (R ratio display mode setting)
16) Change the data of page: F, address: 64, and so that the DDS display data is "2A60"to "2AE0".
17) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of ND WB 3200 mode)
2) Remove the C14 filter.

33. Color Reproduction Adjustment –2

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	C1 (R–Y GAIN), C2 (B–Y GAIN), C3 (R–Y HUE), C4 (B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Note: The video out terminal should be terminated at 75Ω .

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 21 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND WB3200 mode setting)
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of addresses C1 to C4 of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses. If not, the new data will not be written to the memory.
6) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 5, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND WB 3200 mode)

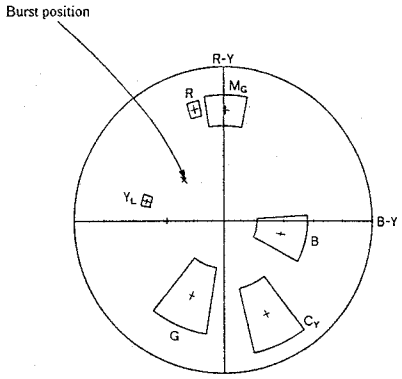


Fig. 7-29.

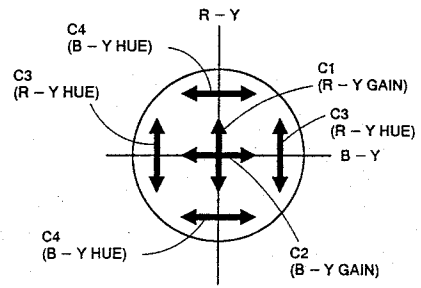


Fig. 7-30. Direction of the Movements of the Adjustment Address and Luminance Point

34. IRIS IN/OUT Adjustment (VC-116 board)

Subject	White pattern standard picture frame
Measurement Point	DDS display of EVF or TV monitor[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (IRIS IN) 3E (IRIS OUT)

Note 1: Hall output data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 01 to page: 6, address: 02.
   (HALL output display mode setting)
4) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
5) Read the DDS display data (D3E).
6) Set the Data (D3E) to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.
7) Set data: 0F to page 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
8) Read the DDS display data and set to (D3D).
9) Set the Data (D3D) to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.8 shutter mode)

35. AGC IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	6C (AGC OUT) 6D (AGC IN)

Note 1: AGC level data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Press the WHITE BALANCE button, and set up the INDOOR (☼) white balance mode.
   (WB INDOOR mode setting)
4) Set data: 02 to page: 6, address: 02.
   (AGC level display mode setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND 0.5 shutter mode setting)
6) Read the DDS display data (D6C).
7) Set the data (D6C) to page: F, address: 6C, and press the PAUSE button of the adjusting remote control unit.
8) Set data: 13 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND 0.8 shutter mode setting)
9) Read the DDS display data (D6D).
10) Set the data (D6D) to page: F, address: 6D, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of ND 0.8 shutter mode)

36. SHUTTER IN/OUT Adjustment

Subject	White pattern standard picture frame
Filter	ND filter 0.1 (1 sheet) and 0.4 (2 sheet)
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3B (SHOT IN) 3C (SHOT OUT)

Note 1: Shutter 8 bit data is the bottom two digits of the display data.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Setting of the center weighting off mode.
   Page: 6, address: 03, data: 03
3) Set data: 05 to page: 6, address: 02.
   (Shutter 8 bit display mode setting)
4) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (AE IRIS mode setting)
5) Attach the ND filter 0.5 (0.1+0.4) to the front of the lens.
6) Read the DDS display data (D3C).
7) Set the data (D3C) to page: F, address: 3C, and press the PAUSE button of the adjusting remote control unit.
8) Remove the ND filter 0.5, and attach the ND filter 0.8 (0.4+0.4).
9) Read the DDS display data (D3B).
10) Set the data (D3B) to page: F, address: D3B, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of AE IRIS mode)

37. Flange Back Adjustment

Subject	Chart for flange back adjustment (1200 ± 5 mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	99 (TRACK COMP WIDE) 9A (START STEP) 9B (LENZ TELE H) 9C (LENZ TELE H+1) 9D (LENZ WIDE H) 9E (LENZ WIDE H+1) 9F (TRACK COMP TELE) A0 (PSD NEAR) A1 (PSD MID) A2 (PSD FAR)

Adjusting method:
1) Turn the auto focus off.
2) Adjust the focus using the focus ring.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 11 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 99 to A2 data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
8) Set data: 25 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end, and at the WIDE end. The adjustment data is automatically input to page: F, addresses: 99 to A2.)
9) Check that the data of page: 6, address: 11 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.

38. Flange Back Check

Subject	Siemens star (1.2m from the front of the lens) (Luminance: Approx. 200 lux)
Measurement Point	DDS display of EVF or TV monitor[Note 1]
Measuring Instrument	
Specified Value	D2=D1 ± 3

Note 1: PDS output data is the bottom four digits of the display data.

Checking method:
1) Set data: 0C to page: 6, address: 02. (PDS output display mode setting)
2) Place the Siemens star 1.2m from the front of the lens.
3) Press the IRIS button, and set up the MANUAL IRIS mode.
4) Turn the CONTROL dial so that "F1.6" is indicated on the EVF or monitor TV.
5) Adjust the luminance intensity for the siemens star so that optimum image is obtained.
6) Turn off the auto-focus.
7) Shoot the Siemens star with the zoom TELE end.
8) Rotate the focus ring, and adjust the focus.
9) Adjust to the zoom WIDE end.
10) Read the PDS output data (4 digits) displayed on the TV monitor, and take the value as D1.
11) Rotate the focus ring, and adjust the focus.
Read the PDS output data value here, and take the value as D2.
12) Check that D2=D1 ± 3.

39. Indoor white Balance Check

Subject	White pattern standard picture frame
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope

Checking method:
1) Press the WHITE BALANCE button, and set up the INDOOR (☼) white balance mode.
2) Confirm that the center of the white luminance point is within the standard circle.
3) Turn the ND filter on with the ND FILTER switch.
4) Confirm that the center of the white luminance point is within the standard circle.
5) Turn the ND filter off.

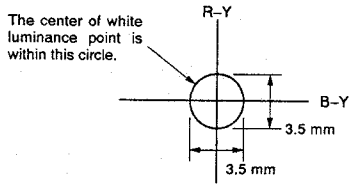


Fig. 7-31.

40. Outdoor White Balance Check

Subject	White patter standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vector scope

Checking method:
1) Cover the lens with the C14 filter for color temperature.
2) Press the WHITE BALANCE button, and set up the OUTDOOR (☀) white balance mode.
3) Confirm that the center of the white luminance point is whithin the standard circle.
4) Turn the ND filter on with the ND FILTER switch.
5) Confirm that the center of the white luminance point is within the standard circle.
6) Turn the ND filter off.

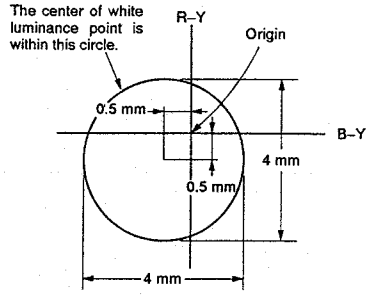


Fig. 7-32.

41. Auto White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filters 1.0, 0.4 and 0.1
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope

Checking method:
1) Release the protect.
Page: 6, address: 00, data: 01
2) Set data: 01 to page: F, address: 5A, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting.)
3) Press the WHITE BALANCE button, and set up the auto white balance mode.
4) Cover the lens with the C14 filter and confirm that the white luminance point matches with the origin in about 6 seconds.
5) Confirm that the white luminance point is within the circle 1.
6) remove the C14 filter.
7) Cover the lens with ND filter 1.5 (1.0+0.4+0.1)
8) Confirm that the white luminance point is within the circle 2.
9) Remove the ND filter 1.5.
10) Turn the power off and then on.
11) Turn the built-in ND filter on with the ND filter switch, and repeat steps 3) to 6).

Processing after completing adjustment
1) Release the protect.
Page: 6, address: 00, data: 01
2) Set data: 10 to page: F, address: 5A, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto whtie balance high speed tracking mode.)

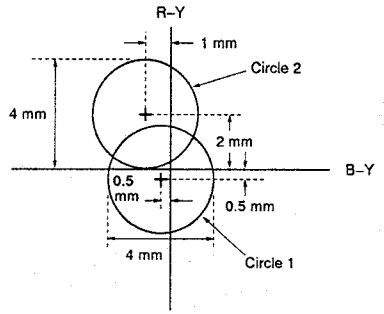


Fig. 7-33.

42. MANUAL GAIN confirmation

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (one) and 0.9 (two)
Measurement Point	Pin ① (Y OUT) of CN751
Measuring Instrument	Oscilloscope
Specified Value	9dB: A=65 ± 10 mV 18dB: A=130 ± 10 mV

Checking method:
1) Check that the lens is not covered with ND filter.
2) Press the GAIN button and set up the manual gain mode.
3) Check that "0dB" is indicated on the EVF or monitor TV.
4) Place the ND filter 2.8 (1.0+0.9+0.9) on the lens.
5) Turn the CONTROL dial so that "9 dB" is indicated on the EVF or monitor TV.
6) Check that Y signal level (A) is 65 ± 10 mV.
7) Press the GAIN button and release the manual gain mode.
8) Press the GAIN button and set up the manual gain mode again.
9) Check that "18 dB" is indicated on the EVF or monitor TV.
10) Check that Y signal level (A) is 130 ± 10 mV.

Processing after completing adjustments
1) Press the GAIN button and release the manual gain mode.

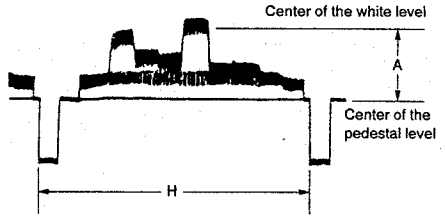


Fig. 7-34.

43. MANUAL IRIS confirmation

Subject	Color bar standard picture frame
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Specified Value	IRIS OPEN: 01 to 05 IRIS F5•6: BA to BE IRIS CLOSE: F8 to FE

Note 1: Hall output data is the bottom two digits of the display data.

Checking method:
1) Set data: 01 to page: 6, address: 02.
(HALL output display mode setting)
2) Press the IRIS button and set up the manual iris mode.
3) Read the DDS display data, and memorizing this data.
4) Cover the lens with a black cap.
5) Check that the DDS display data is not changed.
6) Press the IRIS button, and release the manual iris mode.
7) Check that the DDS display data is "01" to "05".
(IRIS OPEN)
8) Turn the CONTROL dial so that "F5•6" is indicated on the EVF or monitor TV.
9) Check that the DDS display data is "BA" to "BE". (IRIS F5•6)
10) Turn the CONTROL dial so that "IRIS CLOSE" is indicated on the EVF or monitor TV.
11) Check that the DDS display data is "F8" to "FE".
(IRIS CLOSE)

Processing after completing adjustment
1) Press the IRIS button, and release the manual iris mode.
2) Remove the black cap.

44. PSD confirmation

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	

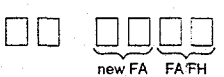
Note 1: PSD output data is the bottom two digits of the display data.

Checking method:
1) Set data: 0C to page: 6, address: 02.
(PDS output display mode setting)
2) Set the zoom ring to the TELE-end position.
3) Set the Focus ring to the far-end (00) position.
4) Check that the DDS display data (DFAR) is below "FE".
5) Read the data (DA2) of page: F, address: A2.
(PSD FAR).
6) Check that DFAR is DA2 ± 5.
7) Set the Focus ring to the near-end position.
8) Check that the DDS display data (DNEAR) is over "00".
9) Read the data (DA0) of page: F, address: A0
(PSD NEAR).
10) Check that DNEAR is DA0 ± 5.
11) Check that DA2-DA0 is more than 60H.
(Note: 60H is hexadicimal notation)

45. Auto Focus Check

Subject	Color bar chart standard picture frame
Measurement Point	DDS display of EVF or monitor TV[Note 1]
Measuring Instrument	
Specified Value	new FA data: over 10 FA/FHdata: 03 or 04

Note 1: new FA data and FA/FH data are four digits of the display data.



Checking method:
1) Set data: 0A to page: 6, address: 02.
(new FA, FA/FH data display mode setting)
2) Turn the auto focus on.
3) Check that a sharp image is obtained.
4) Check that the new FA data of DDS display is over "10".
5) Check that the FA/FH data of DDS display is "03" or "04".

7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (VF-41 BOARD)

7-3-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Specified Value	See Fig. 7-36.

Adjusting method:
1) Adjust RV955 (BRIGHT) for appropriate brightness on CRT screen.
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 7-35.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

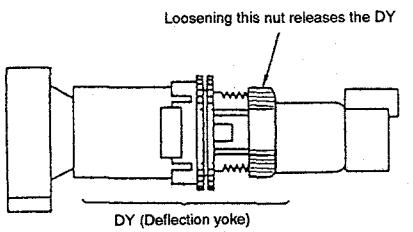
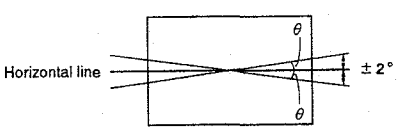


Fig. 7-35.



Specified value: Image orientation within ± 2° of horizontal line.

Fig. 7-36.

7-3-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Specified Value	See Fig. 7-38.

Adjusting method:
1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-37.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

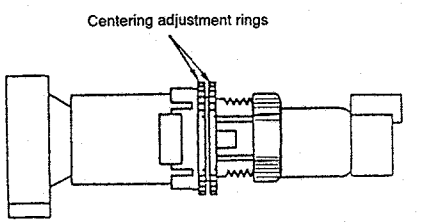


Fig. 7-37.

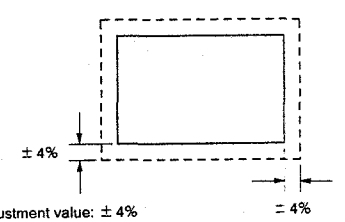


Fig. 7-38.

7-3-3. AFC Adjustment (VF-41 board)

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C954 ⊕ side
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV951 (AFC)
Specified Value	2.30 ± 0.05 Vdc

Adjusting method:
1) Adjust RV951 (AFC) for 2.30 ± 0.05 Vdc.

7-3-4. Horizontal Amplitude Adjustment (VF-41 board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Adjustment Element	C961
Specified Value	6 ± 3%

Adjusting method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by RV952 (V SIZE).
2) Rotate RV955 (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern [A] of the H size adjustment capacitor (C961) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-40.)

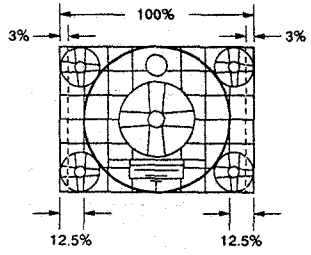
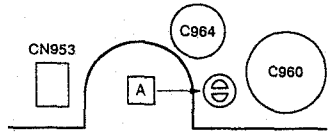


Fig. 7-39.



VF-41 BOARD (COMPONENT SIDE)

A section	H size
Short	Large
Open	Small

Fig. 7-40.

7-3-5. Vertical Amplitude Adjustment (VF-41 board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Adjustment Element	RV952 (V SIZE)
Specified Value	5 ± 3%

Adjusting method:

1) By turning RV952 (V SIZE), adjust vertical overscan to 5 ± 3% (upper and lower total).

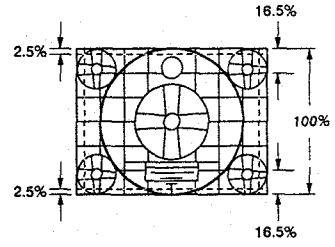


Fig. 7-41.

7-3-6. Focus Adjustment (VF-41 board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Adjustment Element	RV954 (FOCUS)

Adjusting method:

1) Adjust to the best focus point with RV954.

7-3-7. Brightness, Contrast Adjustments (VF-41 board)

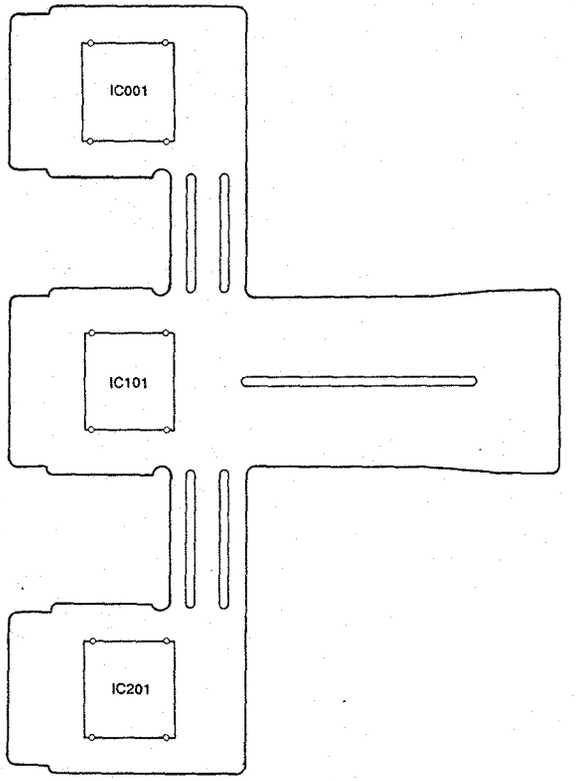
Mode	Playback
Signal	Alignment tape for checking operation (WR5-8CSE) Monoscope portion
Adjustment Element	Brightness: RV955 (BRIGHT) Contrast: RV953 (CONT)

Adjusting method:

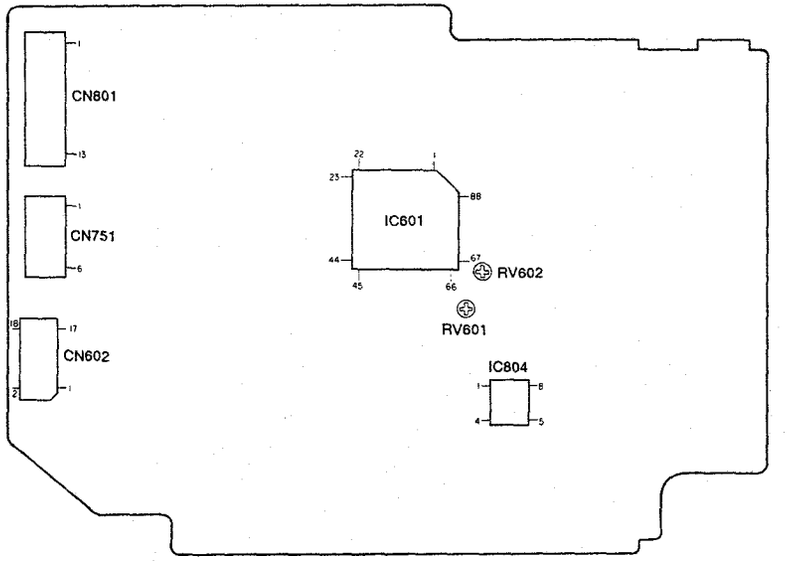
1) Adjust RV955 (BRIGHT) and RV953 (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

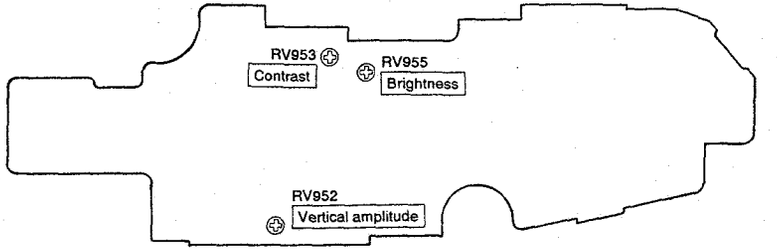
FP-530 BOARD (COMPONENT SIDE)



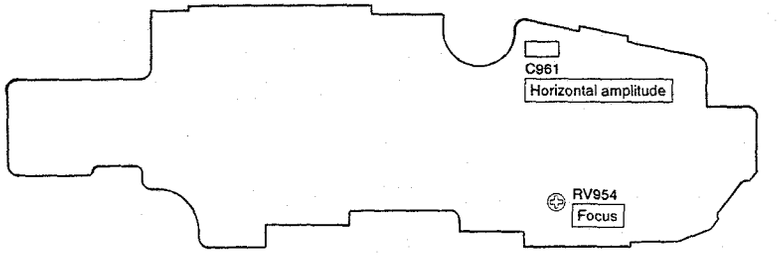
VC-116 BOARD (COMPONENT SIDE)



VF-41 BOARD (COMPONENT SIDE)



VF-41 BOARD (CONDUCTOR SIDE)



SECTION 8
MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments

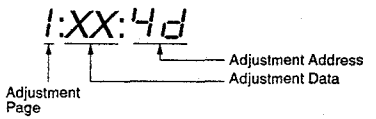
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3.)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: SA-49 board CN001 pin ④ (PB RF)
   CH2: SA-49 board CN001 pin ⑧ (RF SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).

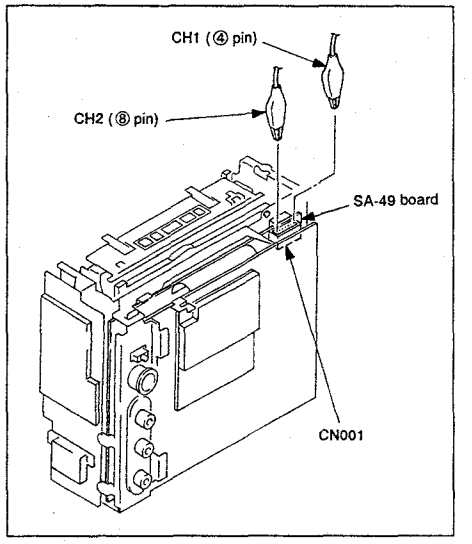


Fig.8-1.

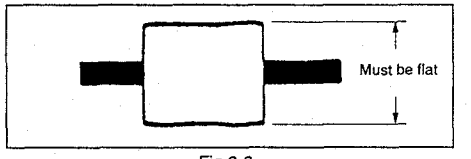


Fig.8-2.

SECTION 9
VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 360.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For Hi8 mode video frequency characteristics adjustment (WR5-7CE)
      Part Code: 8-697-995-18
    - For checking normal mode operations
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Or (WR5-4CSP)
      Part Code: 8-967-995-46
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8NLE)
      Part Code: 8-967-995-57
12) Adjusting remote control unit (J-6082-053-A)
13) CR-42 board extension cord (20P, 0.8 mm)
    Part code: J-6082-197-A
14) Mechanism block (CC-74 board) extention cord (30P, 0.8 mm)
    Part Code: J-6082-239-A
15) Mechanism block (loading motor) extention cord (4P)
    Part Code: J-6082-167-A

9-1-2. Precautions Upon Adjustments

The mic amp (MJ-53 board) section is not required for adjusting the video section.
Remove the following connector if removing the mic amp section.

1. CN351 of MJ-53 board (6P)

The cassette lid assembly and the cabinet (R) assembly are not required for adjusting the video section.
Remove the following connectors if removing the cassette lid assembly and the cabinet (R) assembly.

1. CN341 of FD-47 board (13P)

Cabinet (L) is necessary for connecting the adjusting remote control unit.

The camera block (Including the VC-116 and VC-119 boards) is only required for "Power Supply System Adjustment". Remove the following connectors, and remove it from the VTR block.

1. CN751 of VC-116 board (6P)
2. CN801 of VC-116 board (6P)
3. 4 pin connector of the camera DC/DC converter

9-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 9-1 according to the input terminal specifications (S VIDEO or VIDEO), adjust the power supply switch (CAMERA/OFF/VTR (or PLAYER)) (VK-26 board S001) to the "VTR (or PLAYER)" position, and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications. However, the S video input terminal will have the priority. When adjusting with the video input terminal input, disconnect the connector from the S video input terminal.

Note: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.
When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.

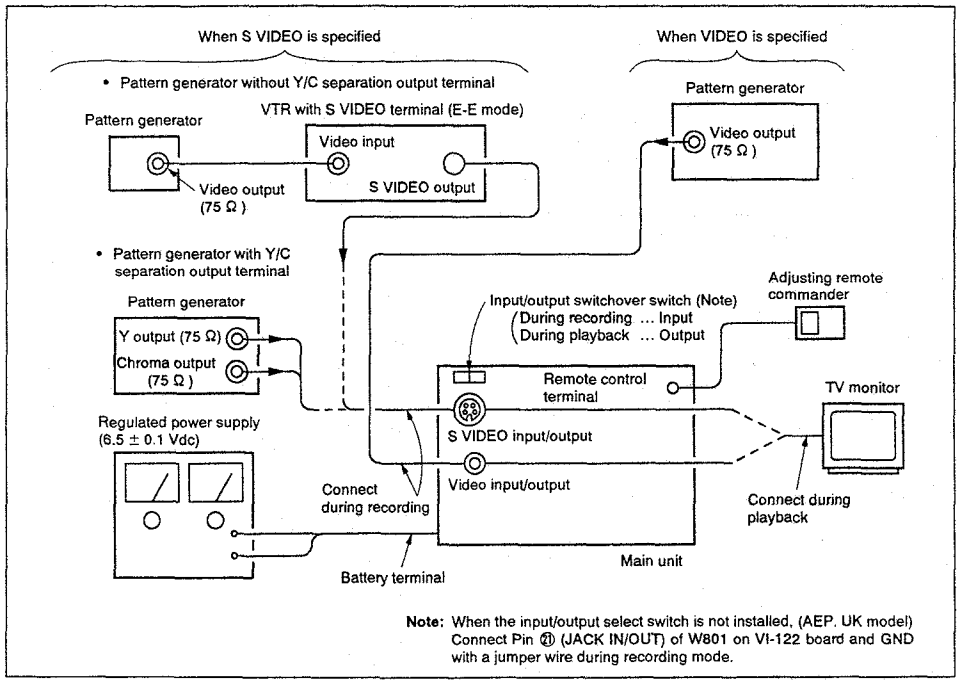
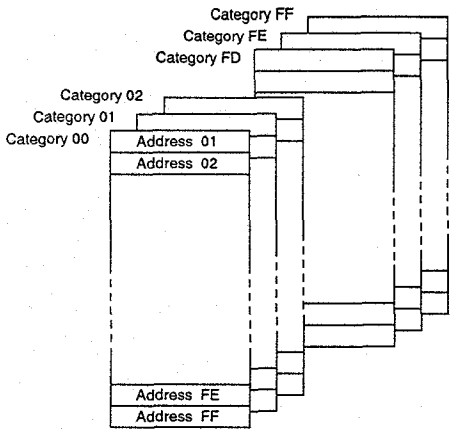

When S VIDEO is specified
When VIDEO is specified
• Pattern generator without Y/C separation output terminal
Pattern generator
VTR with S VIDEO terminal (E-E mode)
Pattern generator
Video input
Video output (75 Ω)
S VIDEO output
Video output (75 Ω)
• Pattern generator with Y/C separation output terminal
Pattern generator
Y output (75 Ω)
Chroma output (75 Ω)
Input/output switchover switch (Note)
During recording ... Input
During playback ... Output
Adjusting remote commander
Remote control terminal
TV monitor
Regulated power supply (6.5 ± 0.1 Vdc)
S VIDEO input/output
Video input/output
Connect during recording
Connect during playback
Battery terminal
Main unit
Note: When the input/output select switch is not installed, (AEP, UK model) Connect Pin ⑦ (JACK IN/OUT) of W801 on VI-122 board and GND with a jumper wire during recording mode.

Fig. 9-1.

(2) Category codes

This unit uses category codes for pages 2, 3 and 7. The 256 addresses from 00 to FF are insufficient for the mode controller and mechanism controller to access the RAM. Therefore, new category codes have been used to seemingly increase addresses (Addresses 0000 to FFFF).

However, the data of address 00 are actually used as page numbers to form the 256 pages from 00 to FF, as shown in the following figure. This address 00 data are called category codes to discriminate them from the real page numbers. The new pages are called categories.



(Example)

Specification of | Page 2 | Category 01 | Address 15

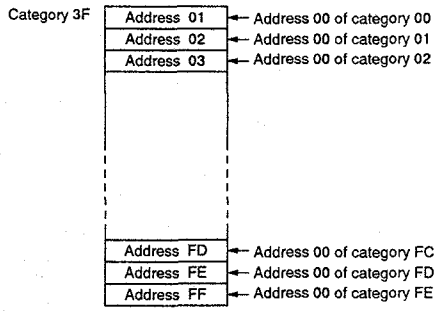
Page 2 is the mode controller

Page 3 is the mechanism controller

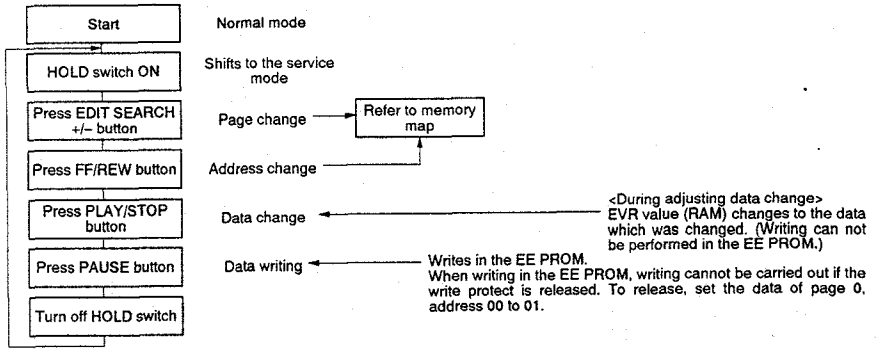
The actual category and address are specified by the adjusting remote commander as follows.

Order	Page	Address	Data	Procedure
1	2	00	01	Select category 01 using the data of page 2, address 00. From here onwards, category 01 will be selected at page 2 until the data of page 2, address 01 is rewritten.
2	2	14		As the data of page 2, address 00 is 01, select page 2, address 14 to select page 2, category 01, address 14. (The data of this address is the battery voltage A/D conversion value of the mode controller input.)

(Supplement) As each category no longer has address 00 as it is, this address cannot be accessed using the adjusting remote commander. Therefore, category 3F is used for accessing address 00.



[Shifting to the service mode using the adjusting remote commander]


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press EDIT SEARCH +/– button
Page change
Refer to memory map
Press FF/REW button
Address change
Press PLAY/STOP button
Data change
<During adjusting data change>
EVR value (RAM) changes to the data which was changed. (Writing can not be performed in the EE PROM.)
Press PAUSE button
Data writing
Writes in the EE PROM.
When writing in the EE PROM, writing cannot be carried out if the write protect is released. To release, set the data of page 0, address 00 to 01.
Turn off HOLD switch

Command Name	Command Function	Normal LANC Command
Page Up	Page+1	Edit Search+
Page Down	Page–1	Edit Search –
Direct Page Set	Sets to the specified page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address–1	Rewind
Data Up	Data+1	Play Back
Data Down	Data–1	Stop
Store	Writes data in the EEPROM, RAM	Pause

2. Page D write protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Release the write protect

3. Test mode setting

Set/release each test mode. Release the protect (Page: 1, Address: 00, Data: 01) before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW, SP/LP automatic discrimination prohibition, manual switching
02	Test mode 2 1'CH frequency response adjustment SP/LP automatic discrimination prohibition, manual switching
03	Test mode 3 Track shift Performs the track shift playback Rear lock distinction prohibition during PB SP/LP automatic discrimination prohibition, manual switching
04	Test mode 4 SP/LP automatic discrimination prohibition, manual switching

※ For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.5 Vdc).

※ Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

4. Emergency code

Fault (error) symptoms can be checked.

Page D	Address 06

First emergency code
·····First error code generated

Page D	Address 07

Last emergency code
·····Last error code generated (This data will be renewed each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after repairs/adjustments.

※ When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

5. Emergency mode

The operation mode can be checked during faults.

Page D	Address 08

First emergency mode
·····The operation mode when the first error is generated

Page D	Address 09

Last emergency mode
·····The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after repairs/adjustments.

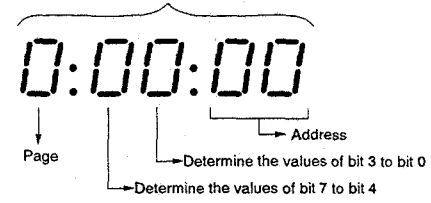
※ When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	STILL
12	LOADING
14	REC PAUSE
26	+X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-SLOW
46	CUE
56	REVIEW
62	STOP TAPE END
66	+X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (-)
97	-STILL
A2	EMERGENCY STOP
A5	EDIT SEARCH (+)
B1	EMERGENCY STOP
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

6. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".

Adjusting remote commander display



	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(R)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

7. Mode controller input check

Page 2	Category 00	Address 02

Bit	Input Signal	Input Signal Level
0	BATT IN (IC452⑮)	"1"=H, "0"=L
1	SYSTEM SYNC (IC452⑯)	"1"=SYSTEM SYNC input present, "0"=No SYSTEM SYNC input
2	PB V (IC452⑰)	
3	LANC PWR ON (IC452⑱)	"1"=H, "0"=L
4	LI PREEND (IC452⑲)	"1"=H, "0"=L
5	RF SWP (IC452⑳)	
6	$\overline{\text{FE ON}}$ (IC452㉑)	"1"=H, "0"=L
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	02		The H/L of each input signal can be discriminated by differentiating the bit values of the display data.

Page 2	Category 00	Address 04

Bit	Input Signal	Input Signal Level
0		
1		
2		
3	CLK 8M/$\overline{\text{32K}}$ (IC452㉖)	"1"=H, "0"=L
4		
5		
6		
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	04		The H/L of each input signal can be discriminated by differentiating the bit values of the display data.

8. Key input check

Page 2	Category 3F	Address 01

Bit	Key Switch	Condition of Switch
0	Date	
1	Time	
2	Eject	
3	Video power supply	"1"=OFF
4		"0"=ON
5	Start/Stop	
6	CC DOWN (Mechanism section)	
7	Camera power +standby	

Using method:

Order	Page	Address	Data	Procedure
1	2	00	3F	Specification of category 3F
2	2	01		The on/off of each key switch can be discriminated by differentiating the bit values of the display data.

9. Key input check (A/D Port)

Page 2	Category 01	Address 15 to 19

Display Data / Address	00 to 0F	10 to 2F	30 to 4F	50 to 6F	70 to 8F	90 to AF	B0 to CF	D0 to EF
15 (K AD IN 0 SA-46 IC452 ㉜)	STOP	FF	REC	DATA SCREEN ON	REVERSE	MENU EXECUTE	MENU ◀	MENU ▼
16 (K AD IN 1 SA-46 IC452 ㉝)	PAUSE	REW	PLAY	SLOW	FORWARD	MENU	MENU ▶	TITLE 2
17 (K AD IN 2 SA-46 IC452 ㉞)		EDIT SEARCH +X1		EDIT SEARCH −X1	TITLE 1	MEMORY	COLOR/ MODE	
18 (K AD IN 3 SA-46 IC452 ㉟)	INDEX MARK	COUNTER/ TIME CODE	COUNTER RESET	ZERO MEMORY	FADER	ND FILTER	AUTO LOCK HOLD	AUTO LOCK
19 (K AD IN 4 SA-46 IC452 ㊱)	PROGRAM AE	IRIS	SHUTTER SPEED	GAIN	WHITE BALANCE	◪	FOCUS	

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	15 to 19		The key pressed can be discriminated by the display data of each address.

10. Wireless remote commander reception contents check

Page 2	Category 01	Address 11

Display Data	Pressed Key of Wireless Remote Commander
FF	Non
9A	TELE
9B	WIDE
99	Start/Stop
1B	REW
1C	FWD
18	Stop
1A	Playback
19	Pause
5A	Data screen
1D	Record
23	Slow

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	11		The pressed key of the wireless remote commander can be discriminated by the display data.

11. Battery voltage check

Page 2	Category 01	Address 14

Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4 Vdc
E0	Approx. 8.8 Vdc
D0	Approx. 8.2 Vdc
C0	Approx. 7.5 Vdc
B0	Approx. 6.9 Vdc
A0	Approx. 6.3 Vdc
90	Approx. 5.6 Vdc
80	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	14		The battery voltage can be discriminated by the display data.

※ Voltage measurement accuracy is approx. ± 10%.

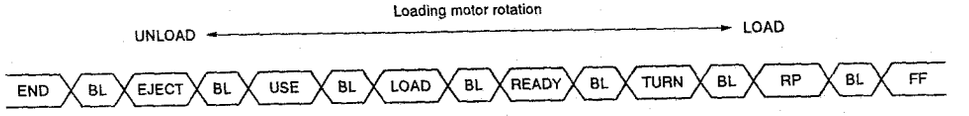
12. Mechanism section switch, etc. check

Page 2	Category 00	Address 86

Bit	Switch, etc.	Condition
0	Hi8 MP	"1"=Hi8 MP tape, "0"=Others
1	J MONO/STE DET	"1"=Audio input/output terminal (right) unconnection condition, "0"=Audio input/output terminal (right) connection condition
2	ME/MP	"1"=ME tape, "0"=MP tape
3	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
4		
5	MODE SW 2	
6	MODE SW 1	
7	MODE SW 0	

			POSITION	FUNCTION	CC DOWN	Display Data
0	0	0	BL	Interval of each position		0*
0	1	1	END	FULL END processing (T side lock removal)	1	6*
0	0	1	EJECT	Cassette compartment ejection	1	2*
1	0	1	USE	EJECTED (Unskate end)	1	A*
0	0	1	LOAD	LOADING (Skate in)	0	2*
1	0	0	READY	NORMAL STOP position	0	8*
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0	C*
0	1	0	RP	PB, REC, RVS, REV, REW, CUE	0	4*
0	0	0	FF	FF	0	0*

* Don't care



Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	86		The mode switch position can be discriminated by the upper 1 digit of the display data. The conditions of various switches can be discriminated by the bit value of the lower 1 digit.

13. Mechanism controller input/output check

Page 2	Category 00	Address 85

Bit	I/O Signal	Condition
0	LP/$\overline{SP}$ DET	"1"=LP playback, "0"=Others
1	SYNC DET	"1"=VTR SYNC present, "0"=No VTR SYNC
2	REC CLOG	"1"=Clog occurred, "0"=Others
3		
4	JOG	"1"=Variable speed playback, "0"=Others
5	VA PB MODE	"1"=PB mode, "0"=E-E mode
6	AUDIO MUTE	"1"=Mute, "0"=Audio output
7	VIDEO MUTE	"1"=Mute, "0"=Video output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	85		The condition of each input/output signal can be discriminated by differentiating the bit value of the display data.

14. Mechanism controller input check

Page 2	Category 00	Address 89

Bit	I/O Signal	Condition
0		
1	$\overline{DEW\ SENS}$	"0"=Condensation occurred, "1"=Others
2		
3		
4	MIC $\overline{MONO}$/STE DET	"0"=During monaural external microphone use, "1"=Others
5	$\overline{S\ JACK\ IN}$	"0"=S VIDEO terminal connection condition, "1"=S VIDEO terminal open condition
6	Hi8/$\overline{NOR}$ DET	"1"=Hi8 mode playback, "0"=Others
7	PB $\overline{MONO}$/STE DET	"1"=During AFM stereo/bilingual tape playback, "0"=Others

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	89		The condition of each input signal can be discriminated by differentiating the bit values of the display data.

15. Mechanism controller A/D port input voltage check

Page 3	Category 02	Address 14

Display Data	A/D Port Input Voltage
00 to FF	Approx. 0 Vdc to approx. 5 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	02	Permission for A/D conversion operations
3	3	13		Set the data according to the following table, and specify the A/D port of the mechanism controller.
4	3	14		The A/D port input voltage can be discriminated according to the display data.

Data	Mechanism Controller Port
00	⑫ pin; AN0, T REEL FG
01	⑪ pin; AN1, S REEL FG
02	⑩ pin; AN2, ATF ERROR
03	Not used
04	⑧ pin; AN4, DEW SENS
05	⑦ pin; AN5, TOP SENS
06	⑥ pin; AN6, END SENS
07	⑤ pin; AN7, THERMISTER

16. Tape top/end sensor check

Page 3	Category 02	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape top
10	Tape end
11	No tape

Tape end sensor condition
Tape top sensor condition
"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

17. Individual operations of the drum, capstan, and loading motor

Page 3	Category 02	Address 11

Display	Operations
00	Normal
02	Drum in normal rotation
04	Drum in reverse rotation
06	Capstan in normal rotation
08	Capstan in reverse rotation
0A	Loading motor in normal rotation
0C	Loading motor in reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	01	Permission for individual operations of motor
3	3	11		The motor can be operated individually by setting the data indicated above.
4				Turn off the main power supply (6.5 Vdc).

18. Zoom switch check

Page 2	Category 01	Address 3D

Display Data	Condition of Zoom switch
FF	TELE side pressed.
↑	↑
Approx. 80	Nor pressed.
↓	↓
00	WIDE side pressed.

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	3D		Condition of the zoom switch can be discriminated by the display data.

19. Control dial check

Page 2	Category 01	Address 3E

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	3E		The display data is changed by the control dial.

20. Time code check

Page 2	Category 01	Address 3E

Address	Time code
54	Hour
55	Minutes
56	Seconds
57	Frame No.

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	53	01	Specification of time code display mode
3	2	54 to 57		Time code can be discriminated by the display data of each address.

21. Page D Address List

Note 1: The adjustment data initial value is data input before performing video section adjustment (Page D) when the Page D data has been lost due to some reason.

Note 2: The data listed in the adjusting data memo column are fixed.
After adjusting, check that these data have been rewritten correctly.

*1 No mark: AEP, UK model
[ ]: E, Australian, Tourist model

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
00		World clock standard area		
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	80[81]*1	80[81]*1
03	BATT DOWN LEVEL	Battery end adjustment	01	
04	SW POSITION (LOW)	SW POSITION adjustment (Top)	80	
05	SW POSITION (HIGH)	SW POSITION adjustment (Bottom)	0A	
06	EMERGENCY code (FIRST)	Error codes and modes are recorded. Rewrite the data of these addresses to 00 after completing repairs/adjustments.	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	D8	D8
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	DC	DC
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	E5	E5
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	EF	EF
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	D8	D8
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	DC	DC
10	SR DATA (MP HI8 SP)	CXA1207 serial data	E5	E5
11	SR DATA (MP HI8 LP)	CXA1207 serial data	EF	EF
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	DC	DC
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	E5	E5
14				
15				
16				
17				
18				
19				
1A				
1B				
1C				
1D				
1E				
1F				
20	VARIATION	DDS display starting year, EJECT permission etc.	50	50
21	AJUST MODE	CAM P ON, VTR P ON etc.	00	00
22	TITLE POS EE		00	00
23	TITLE POS PB		00	00
24 to 28		Not used.		
29	MECHA SWITCH		03	03

Table 9-3 (1).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
2A	SLOW BRK ADJ F		00	00
2B	SLOW BRK ADJ R		00	00
2C	STILL BRK ADJ		00	00
2D	BATT REF LOW		00	00
2E	BATT REF MID		00	00
2F	BATT REF FUL		00	00
30	REC C 1CH (ME E SP)	Hi8 ME SP CH1 REC C level adjustment (IC001 ⑲)	7C	
31	REC C 1CH (MP E SP)	Hi8 MP SP CH1 REC C level adjustment (IC001 ⑲)	94	
32	REC C 1CH (ME L SP)	Normal ME SP CH1 REC C level adjustment (IC001 ⑲)	80	
33	REC C 1CH (MP L SP)	Normal MP SP CH1 REC C level adjustment (IC001 ⑲)	8E	
34	REC C 1CH (ME E LP)	Hi8 ME LP CH1 REC C level (IC001 ⑲)	80	
35	REC C 1CH (MP E LP)	Hi8 MP LP CH1 REC C level (IC001 ⑲)	80	
36	REC C 1CH (ME L LP)	Normal ME LP CH1 REC C level (IC001 ⑲)	80	
37	REC C 1CH (MP L LP)	Normal MP LP CH1 REC C level (IC001 ⑲)	80	
38		Not used.		
39		Not used.		
3A	1'CH MT	Not used.	00	00
3B				
3C		Not used.		
3D		Not used.		
3E		Not used.		
3F		Not used.		
40		Not used.		
41		Not used.		
42		Not used.		
43		Not used.		
44		Not used.		
45	REC C RF (REC MP E)	REC C RF level adjustment (IC001 ④)	80	
46	REC C RF (REC)	REC C RF level adjustment (IC001 ④)	D3	
47	REC C RF (PB)	PB mode REC C RF level (IC001 ④)	80	80
48	RF CONT (ME)	ME RF CONT (IC456 ⑬)	6F	6F
49	RF CONT (MP)	MP RF CONT (IC456 ⑬)	88	88
4A	SYNC AGC	SYNC AGC adjustment (IC801 ⑱)	79	
4B		Not used.		
4C	COMB ADJ	Chroma comb filter adjustment (IC801 ⑲)	AD	
4D	IR	IR adjustment (IC801 ④)	93	
4E	CAR.-E ME	Hi8 ME Y-FM carrier frequency adjustment (IC801 ⑤)	9C	
4F	CAR.-E MP	Hi8 MP Y-FM carrier frequency adjustment (IC801 ⑤)	9C	
50	CAR.-L	Normal Y-FM carrier frequency adjustment (IC801 ⑥)	9B	
51	TITL THRESH	Title threshold level adjustment (IC456 ⑱)	4C	
52	REC Y 1CH (ME E)	Hi8 ME CH1 REC Y level adjustment (IC001 ⑬)	9D	

Table 9-3 (2).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
53	REC Y 1CH (MP E)	Hi8 MP CH1 REC Y level adjustment (IC001 ⑬)	A4	
54	REC Y 1CH (ME L)	Normal ME CH1 REC Y level adjustment (IC001 ⑬)	A9	
55	REC Y 1CH (MP L)	Normal MP CH1 REC Y level adjustment (IC001 ⑬)	AE	
56	REC Y 1CH (PB)	PB mode CH1 REC Y level (IC001 ⑬)	80	80
57	PB Y (EE)	EE mode PB Y level (IC801 ⑨)	80	80
58	PB Y (E)	Hi8 PB Y level adjustment (IC801 ⑨)	6B	
59	PB Y (L)	Normal PB Y level adjustment (IC801 ⑨)	AC	
5A	EMPH (EE)	Emphasis input level adjustment (IC801 ⑫)	8C	
5B	EMPH (PB)	PB YDL input level adjustment (IC801 ⑫)	8C	
5C	REC C 2CH (ME E SP)	Hi8 ME SP CH2 REC C level adjustment (IC001 ⑱)	7C	
5D	REC C 2CH (MP E SP)	Hi8 MP SP CH2 REC C level adjustment (IC001 ⑱)	94	
5E	REC C 2CH (ME L SP)	Normal ME SP CH2 REC C level adjustment (IC001 ⑱)	80	
5F	REC C 2CH (MP L SP)	Normal MP SP CH2 REC C level adjustment (IC001 ⑱)	8E	
60	REC C 2CH (ME E LP)	Hi8 ME LP CH2 REC C level (IC001 ⑱)	80	
61	REC C 2CH (MP E LP)	Hi8 MP LP CH2 REC C level (IC001 ⑱)	80	
62	REC C 2CH (ME L LP)	Normal ME LP CH2 REC C level (IC001 ⑱)	80	
63	REC C 2CH (MP L LP)	Normal MP LP CH2 REC C level (IC001 ⑱)	80	
64	PILOT CONT (ME)	ME PILOT CONT (IC456 ⑫)	8F	8F
65	PILOT CONT (MP)	MP PILOT CONT (IC456 ⑫)	7F	7F
66	YD ADJ	YD adjustment (IC801 ②)	80	
67	PAL JOG	PAL JOG adjustment (IC801 ③)	80	
68	D. CLIP (ME E SP)	Hi8 ME SP DARK CLIP (IC801 ⑦)	95	95
69	D. CLIP (MP E SP)	Hi8 MP SP DARK CLIP (IC801 ⑦)	9B	9B
6A	D. CLIP (ME L SP)	Normal ME SP DARK CLIP (IC801 ⑦)	7C	7C
6B	D. CLIP (MP L SP)	Normal MP SP DARK CLIP (IC801 ⑦)	7C	7C
6C	D. CLIP (ME E LP)	Hi8 ME LP DARK CLIP (IC801 ⑦)	9A	9A
6D	D. CLIP (MP E LP)	Hi8 MP LP DARK CLIP (IC801 ⑦)	87	87
6E	D. CLIP (ME L LP)	Normal ME LP DARK CLIP (IC801 ⑦)	84	84
6F	D. CLIP (MP L LP)	Normal MP LP DARK CLIP (IC801 ⑦)	84	84
70	W. CLIP (ME E SP)	Hi8 ME SP WHITE CLIP (IC801 ⑧)	80	80
71	W. CLIP (MP E SP)	Hi8 MP SP WHITE CLIP (IC801 ⑧)	6A	6A
72	W. CLIP (ME L SP)	Normal ME SP WHITE CLIP (IC801 ⑧)	AF	AF
73	W. CLIP (MP L SP)	Normal MP SP WHITE CLIP (IC801 ⑧)	AF	AF
74	W. CLIP (ME E LP)	Hi8 ME LP WHITE CLIP (IC801 ⑧)	6A	6A
75	W. CLIP (MP E LP)	Hi8 MP LP WHITE CLIP (IC801 ⑧)	61	61
76	W. CLIP (ME L LP)	Normal ME LP WHITE CLIP (IC801 ⑧)	9B	9B
77	W. CLIP (MP L LP)	Normal MP LP WHITE CLIP (IC801 ⑧)	9B	9B
78	REC MATRIX	REC matrix adjustment (IC456 ③)	AC	
79	PB MATRIX	PB matrix adjustment (IC456 ④)	A4	
7A	1.5 IR	1.5 MHz IR adjustment (IC456 ⑦)	AD	
7B	1.5 DEV	1.5 MHz deviation adjustment (IC456 ⑤)	AE	

Table 9-3 (3).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
7C	1.7 IR	1.7 MHz IR adjustment (IC456 ⑧)	B1	
7D	1.7 DEV	1.7 MHz deviation adjustment (IC456 ⑥)	AB	
7E	AUDIO FADER	Audio fader (IC456 ②)	00	00
7F	PB VCO	Not used.	70	70
80	CAM FADER	Camera fader (IC456 ⑲)	00	00
81 to 83		Not used.		
84	REC Y 2CH (ME E)	Hi8 ME CH2 REC Y level adjustment (IC001 ⑫)	9D	
85	REC Y 2CH (MP E)	Hi8 MP CH2 REC Y level adjustment (IC001 ⑫)	A4	
86	REC Y 2CH (ME L)	Normal ME CH2 REC Y level adjustment (IC001 ⑫)	A9	
87	REC Y 2CH (MP L)	Normal MP CH2 REC Y level adjustment (IC001 ⑫)	AE	
88	REC Y 2CH (PB)	PB mode CH2 REC Y level (IC001 ⑫)	80	80
89	DEV. -E ME	Hi8 ME Y-FM deviation adjustment (IC801 ⑥)	98	
8A	DEV. -E MP	Hi8 MP Y-FM deviation adjustment (IC801 ⑥)	98	
8B	DEV. -L	Normal Y-FM deviation adjustment (IC801 ⑥)	92	
8C	REC PCM 1CH (ME E)	Hi8 ME CH1 REC PCM level adjustment (IC001 ②)	AE	
8D	REC PCM 1CH (MP E)	Hi8 MP CH1 REC PCM level adjustment (IC001 ②)	AE	
8E	REC PCM 1CH (ME L)	Normal ME CH1 REC PCM level adjustment (IC001 ②)	AE	
8F	REC PCM 1CH (MP L)	Normal MP CH1 REC PCM level adjustment (IC001 ②)	AE	
90	REC PCM 2CH (ME E)	Hi8 ME CH2 REC PCM level adjustment (IC001 ③)	AE	
91	REC PCM 2CH (MP E)	Hi8 MP CH2 REC PCM level adjustment (IC001 ③)	AE	
92	REC PCM 2CH (ME L)	Normal ME CH2 REC PCM level adjustment (IC001 ③)	AE	
93	REC PCM 2CH (MP L)	Normal MP CH2 REC PCM level adjustment (IC001 ③)	AE	
94	Y LEVEL (EE)	E-E VIDEO OUT level adjustment (IC801 ⑬)	88	
95	Y LEVEL (PB)	Playback VIDEO OUT level adjustment (IC801 ⑬)	89	
96	Y OUT LEVEL (EE)	E-E S VIDEO OUT Y level adjustment (IC001 ⑥)	80	
97	Y OUT LEVEL (PB)	Playback S VIDEO OUT Y level adjustment (IC001 ⑥)	80	80
98	C OUT LEVEL (EE)	E-E S VIDEO OUT chroma level adjustment (IC001 ⑦)	80	
99	C OUT LEVEL (PB)	Playback S VIDEO OUT chroma level adjustment (IC001 ⑦)	80	80

Table 9-3 (4).

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (FU-107 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q251 collector
Measuring Instrument	Frequency counter
Specified Value	475 ± 15 kHz

Adjusting method:
1) Check that the oscillator frequency is the specified value.

2. EVF 5V Adjustment (FU-107 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Pin ㉕ of CN251 (EVF 5V)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV251
Specified Value	4.97 ± 0.01 Vdc

Adjusting method:
1) Adjust RV251 so that the EVF 5V voltage becomes the specified value.

3. VI 5V Adjustment (FU-107 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Pins ⑳ and ㉑ of CN251 (VI 5V)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV252
Specified Value	4.81 ± 0.01 Vdc

Adjusting method:
1) Adjust RV252 so that the VI 5V voltage becomes the specified value.

4. Power Voltage Check (FU-107 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
SS5V check	
Measurement Point	Pin ⑭ of CN251
Specified Value	4.95 ± 0.02 Vdc
AU 5V check	
Measurement Point	Pin ⑯ of CN251
Specified Value	4.83 ± 0.02 Vdc
CNR 5V check	
Measurement Point	Pin ⑬ of CN251
Specified Value	4.95 ± 0.02 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-9. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7F

Input method:
1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	E-E
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT DOWN LEVEL)

Connection:
1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-6.

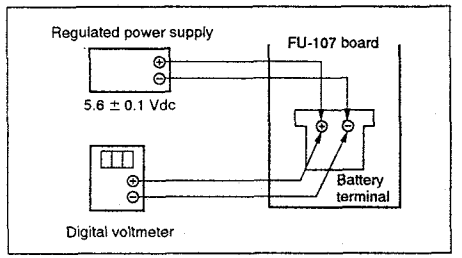


Fig. 9-6.

Adjusting method:
1) Adjust the regulated power supply output voltage so that the digital voltmeter display is 6.5 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 03 to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
   (BATT DOWN LEVEL initial data setting)
4) Decrease the voltage so that the digital voltmeter display is 5.6 ± 0.1 Vdc.
5) Set data: 01 to page: 2, address: 00
   (Specification of page: 2, category: 01)
6) Select page: 2, address: 14, read the adjusting remote control unit display data, and take it as D03.
7) Set data D03 to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Turn off the power supply.
9) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection
1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-6.

Checking method:
Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.5 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.8 ± 0.1 Vdc.
4) Check that the ◁ mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.5 ± 0.1 Vdc.
6) Check that the ◁ mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (SA-49 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ⑧ of CN001 (RF SWP) CH2: Pin ② of CN001 (PB RF 2CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) (LOW) 05 (SW POSITION) (HIGH)
Specified Value	t_1=0 ± 5 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 (For coarse adjustments) and address: 04 (For fine adjustments), and adjust so that the switching position (t_1) becomes the specified value.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address. If not, the new data will not be written in the memory.
4) Press the PAUSE button of the adjusting remote control unit.

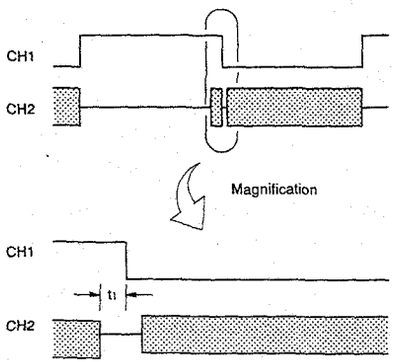


Fig. 9-7.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 9-3. and 9-4.
Use a ME tape unless specified otherwise. Check that the Hi8 switch is at "Auto".

[Adjusting procedure]

1) CH1, CH2 playback frequency characteristics adjustment
2) CH1´ playback frequency characteristics adjustment
3) Flying erase check
4) VXO oscillation frequency check
5) EE level adjustment
6) IR adjustment
7) Chroma comb filter adjustment
8) Emphasis input level adjustment
9) PB Y level adjustment
10) PB YDL´ input level adjustment
11) Normal mode Y FM carrier frequency adjustment
12) Normal mode Y FM deviation adjustment
13) Hi8 mode Y FM carrier frequency adjustment
14) Hi8 mode Y FM deviation adjustment
15) Chroma emphasis adjustment
16) REC C RF level adjustment
17) CH1 REC Y current adjustment
18) CH2 REC Y current adjustment
19) CH1 REC C current adjustment
20) CH2 REC C current adjustment
21) CH1 REC PCM current adjustment
22) CH2 REC PCM current adjustment
23) REC AFM level check
24) REC ATF level check
25) E-E VIDEO OUT level adjustment
26) E-E S VIDEO OUT chroma level adjustment
27) E-E S VIDEO OUT Y level adjustment
28) Playback S VIDEO OUT Y level adjustment
29) Playback S VIDEO OUT chroma level adjustment
30) Playback VIDEO OUT level adjustment
31) YD adjustment
32) Quasi burst phase adjustment
33) Delay burst phase adjustment
34) Title A/D threashold level adjustment
35) E-E title chroma phase adjustment
36) CNR chroma input level adjustment
37) Playback title chroma phase adjustment
38) Character generator fo adjustment

1. CH1, CH2 Playback Frequency Characteristics Adjustment (SA-49 board)

Note: Adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For Hi8 mode frequency characteristics adjustment (WR5-CNE)
Measurement Point	CH1: Pin ④ of CN001 (PB RF) EXT TRIG: Pin ⑧ of CN001 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOP: + [–]
Adjustment Element	RV001 (CH1), [RV002 (CH2)]
Specified Value	4.5 MHz level: 8.5 MHz level= 3: (2.0 ± 0.2)

Adjusting method:

1) Adjust RV001 [RV002] so that the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value.

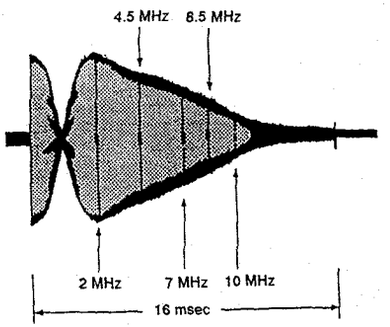


Fig. 9-8.

2. CH1´ Frequency Characteristics Adjustment (SA-49 board)

Mode	CH1´ playback
Signal	Alignment tape: For Hi8 mode frequency characteristics adjustment (WR5-7CE)
Measurement Point	CH1: Pin ④ of CN001 (PB RF) EXT TRIG: Pin ⑧ of CN001 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOP: –
Adjustment Element	RV003
Specified Value	4.5 MHz level: 8.5 MHz level= 3: (2.0 ± 0.2)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 02 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (CH1´ playback mode setting)
3) Adjust RV003 so that the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value.

Processing After Compleating Adjustment

4) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.

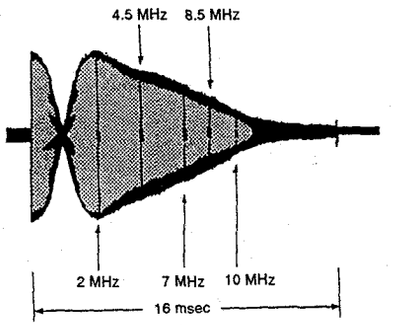


Fig. 9-9.

3. Flying Erase Check (SA-49 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑫ of W001 (FE (X)) (CL040)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 5.5 ± 1.0 Vp-p (ME tape) 7.0 ± 1.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and that the oscillation voltage satisfies the specified value.

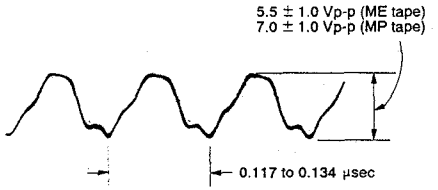


Fig. 9-10.

4. VXO Oscillation Frequency Check (VI-122 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC556
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC556 is 4433619 ± 70 Hz.

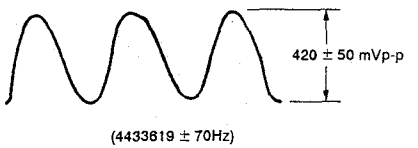


Fig. 9-11.

5. EE Level Adjustment (VI-122 board)

Mode	Camera mode recording
Signal	Y signal of color bar (Note 1)
Measurement Point	Pin ⑥ of CN800 (Y IN) (CL896 or Pin ⑧ of IC805)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=0.5 ± 0.025V

Note 1: Disconnect CN751 of VC-116 board, and input the Y signal as shown Fig. 9-12.

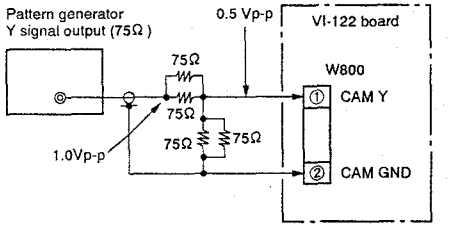


Fig. 9-12.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

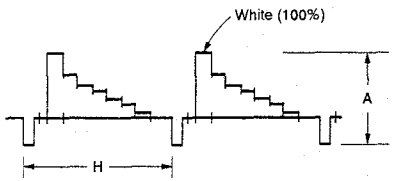


Fig. 9-13.

6. IR Adjustment (VI-122 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of IC551 (Y COMB OUT) (CL567)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Connection

1) Connect pin ⑬ of IC551 (or pin ② of IC554) to pin ⑤ of IC551 with a jumper wire.

Adjusting method:

1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
4) Press the PAUSE button of the adjusting remote control unit.

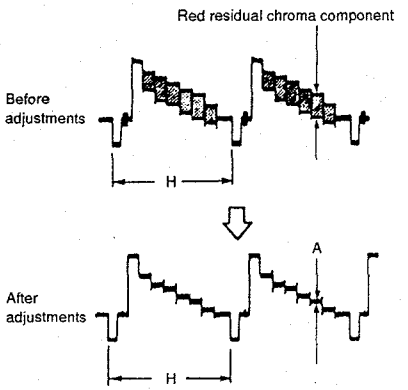


Fig. 9-14.

7. Chroma Comb Filter Adjustment (VI-122 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑪ of IC551 (C+CD) (CL568)
Adjusting Element	Oscilloscope
Measuring Instrument	RV550 (Phase)
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:
1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
4) Adjust RV550 so that the residual chroma component (A) becomes minimum.
5) Repeat 3) and 4) until the specified value is satisfied.
6) Press the PAUSE button of the adjusting remote control unit.

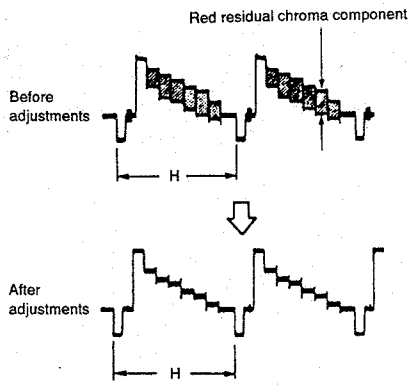


Fig. 9-15.

8. Emphasis Input Level Adjustment (VI-122 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑤ of IC553 (or Pin ③ of IC551) (CL566)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMP LEVEL)
Specified Value	A=0.50 ± 0.02V

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

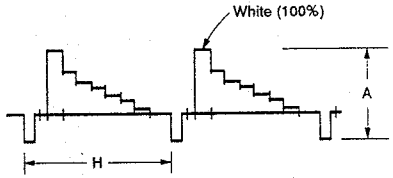


Fig. 9-16.

9. PB Y Level Adjustment (VI-122 board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ⑮ of IC551 (CL557)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode: 59 (PB YL) • Hi8 mode: 58 (PB YE)
Specified Value	A=0.50 ± 0.025V

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
6) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becomes the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

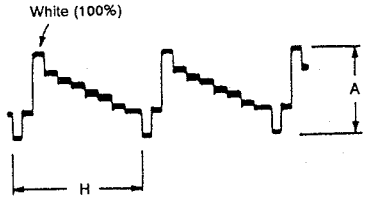


Fig. 9-17.

10. PB YDL Input Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSE) Color bar section
Measurement Point	Pin ⑥ of CN800 (Y IN) (CL896) or Pin ⑧ of IC805
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (EMPH (PB))
Specified Value	A=0.50 ± 0.025V

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

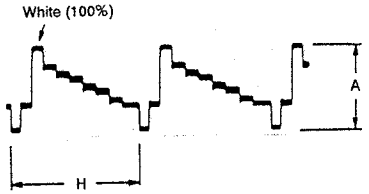


Fig. 9-18.

11. Normal Mode Y FM Carrier Frequency Adjustment (VI-122 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ㊸ of IC551 (Y RF OUT) (CL552) or Pin ㊴ of IC804
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	50 (CAR.-L)
Specified Value	4.37 ± 0.05 MHz

Adjusting method:
1) Insert a normal MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 50, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

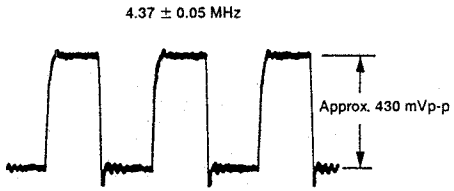


Fig. 9-19.

12. Normal Mode Y FM Deviation Adjustment (VI-122 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC551 (CL557)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8B (DEV.-L)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", and "PB Y Level Adjustment" have been completed.

Adjusting method:
1) Insert a normal MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
6) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

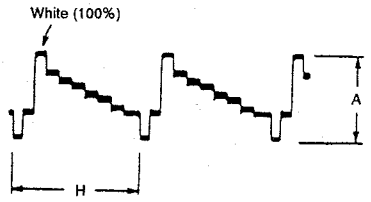


Fig. 9-20.

13. Hi8 Mode Y FM Carrier Frequency Adjustment (VI-122 board)

Mode	E-E
Signal	Non signal
Measurement Point	Pin ㊸ of IC551 (Y RF OUT) (CL552) or Pin ㊴ of IC804
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	ME tape: 4E (CAR.–E ME) Hi8 MP tape: 4F (CAR.–E MP)
Specified Value	5.98 ± 0.04 MHz

Note 1: The adjusting element for Hi8 MP tape is shown in parentheses [ ].

Adjusting method:
1) Insert a ME tape [Hi8 MP tape], and check that the "Hi8" switch in the menu display is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4E [address: 4F], and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

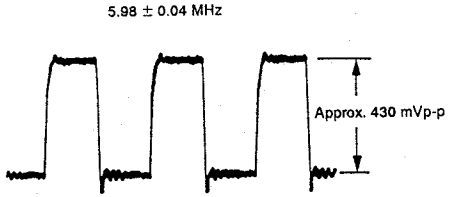


Fig. 9-21.

14. Hi8 Mode Y FM Deviation Adjustment (VI-122 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC551 (CL557)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	ME tape: 89 (DEV.–E ME) Hii8 MP tape: 8A (DEV.–E MP)
Specified Value	A=0.50 ± 0.025V

Note 1: Check that "Emphasis Input Level Adjustment" and "PB Y Level Adjustment" have been completed.
Note 2: The adjusting element for Hi8 MP tape is shown in parentheses [ ].

Adjusting method:
1) Insert a ME tape [Hi8 MP tape], and check that the "Hi8" switch in the menu display is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification: A=0.50 ± 0.025V
6) If the specification is not satisfied, change the data of page: D, address: 89 [address: 8A], and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

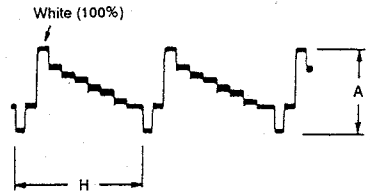


Fig. 9-22.

15. Chroma Emphasis fo Adjustment (VI-122 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ㉔ of IC556 (CL593)
Measuring Instrument	Oscilloscope
Adjustment Element	FL557
Specified Value	Minimum fo component

Connection:

1) Connect pin ㉔ of IC552 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL557 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

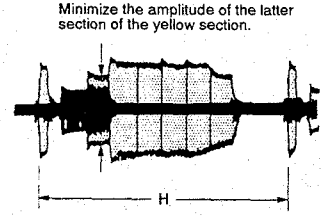


Fig. 9-23.

16. REC C RF Level Adjustment (VI-122 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ③ of IC803 (REC C) or Pin ⑤ of W801
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	ME tape: 46 (REC C RF) *Hi8 MP tape: 45 (REC C RF MP E)*
Specified Value	ME tape A=150 ± 5 mVp-p Hi8 MP tape A=115 ± 5 mVp-p

Note 1: The adjusting element for Hi8 MP tape shown in parentheses [ ].

Adjusting method:

1) Insert a ME tape [Hi8 MP tape] , and check that the "Hi8" switch in the menu display is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 46 [address: 45], and adjust so that the amplitude (A) of the flat part of the chroma signal (red) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

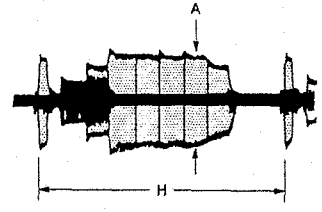


Fig. 9-24.

17. CH1 REC Y Current Adjustment (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	52 (REC Y 1CH (ME E)) 53 (REC Y 1CH (MP E)) 54 (REC Y 1CH (ME L)) 55 (REC Y 1CH (MP L))
Specified Value	ME tape Hi8 mode (ME E) A=210 ± 5 mVp-p Hi8 MP tape Hi8 mode (MP E) A=165 ± 5 mVp-p ME tape normal mode (ME L) A=200 ± 5 mVp-p MP tape normal mode (MP L) A=200 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing each data of address: 84 to address: 87 of page: D, set data: 00 to each address.
   (Minimizing the 2CH REC Y current)

• ME tape Hi8 mode (ME E mode) adjustment

3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch in the menu display is at "Auto".
5) Change the data of page: D, address: 52, and adjust so that REC Y level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch in the menu display is at "Auto".
9) Change the data of page: D, address: 53, and adjust so that the REC Y level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

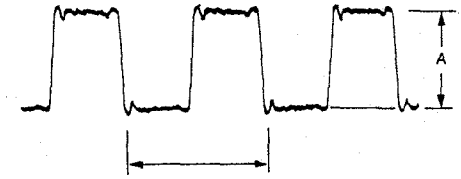
11) Turn the Hi8 switch in the menu display off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 54, and adjust so that the REC Y level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch in the menu display to "Auto".

• MP tape normal mode (MP L mode) adjustment

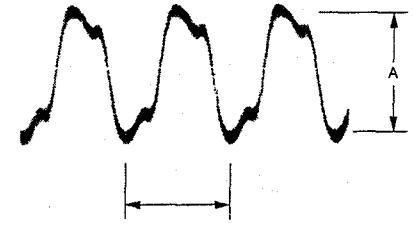
16) Insert the normal MP tape, and set the record mode.
17) Change the data of page: D, address: 55, and adjust so that the REC Y level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.

• Processing after adjustments

19) Set the data memorized at step 2) to each address from address: 84 to address: 87 of page: D and press the PAUSE button of the adjusting remote control unit.



Hi8 (E) mode: Approx. 0.17 µsec



Normal (L) mode: Approx. 0.23 µsec

Fig. 9-25.

18. CH2 REC Y Current Adjustment (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN001 (REC 2CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	84 (REC Y 2CH (ME E)) 85 (REC Y 2CH (MP E)) 86 (REC Y 2CH (ME L)) 87 (REC Y 2CH (MP L))
Specified Value	ME tape Hi8 mode (ME E) A=210 ± 5 mVp-p Hi8 MP tape Hi8 mode (MP E) A=165 ± 5 mVp-p ME tape normal mode (ME L) A=200 ± 5 mVp-p MP tape normal mode (MP L) A=200 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing each data of address: 52 to address: 55 of page: D, set data: 00 to each address.
   (Minimizing the 1CH REC Y current)

• ME tape Hi8 mode (ME E mode) adjustment

3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch in the menu display is at "Auto".
5) Change the data of page: D, address: 84, and adjust so that REC Y level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch in the menu display is at "Auto".
9) Change the data of page: D, address: 85, and adjust so that the REC Y level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

11) Turn the Hi8 switch in the menu display off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 86, and adjust so that the REC Y level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch in the menu display to "Auto".

• MP tape normal mode (MP L mode) adjustment

16) Insert the normal MP tape, and set the record mode.
17) Change the data of page: D, address: 87, and adjust so that the REC Y level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.

• Processing after adjustments

19) Set the data memorized at step 2) to each address from address: 52 to address: 55 of page: D and press the PAUSE button of the adjusting remote control unit.

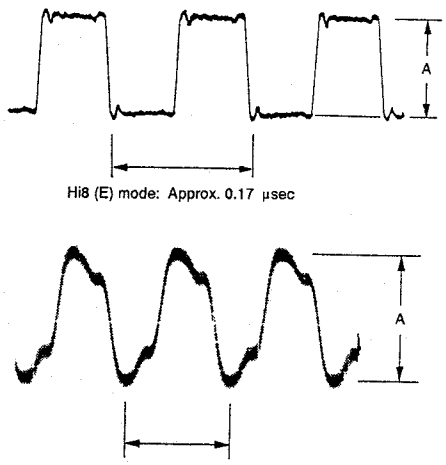


Fig. 9-26.

19. CH1 REC C Current Adjustment (SA-49 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑦ of CN001 (REC 1CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	30 (REC C 1CH (ME E SP)) 31 (REC C 1CH (MP E SP)) 32 (REC C 1CH (ME L SP)) 33 (REC C 1CH (MP L SP)) 34 (REC C 1CH (ME E LP)) 35 (REC C 1CH (MP E LP)) 36 (REC C 1CH (ME L LP)) 37 (REC C 1CH (MP L LP))
Specified Value	ME tape Hi8 mode (ME E) A=58 ± 2 mVp-p Hi8 MP tape Hi8 mode (MP E) A=32 ± 2 mVp-p ME tape normal mode (ME L) A=38 ± 2 mVp-p MP tape normal mode (MP L) A=38 ± 2 mVp-p

Note: Check the "REC MODE" switch in the menu display is at "SP".

Connection

1) Connect Pin ③ of W120 and pin ⑮ of W120 with a jumper wire.
   (Minimizing the REC Y RF level)
2) Connect Pin ⑨ of IC124 and GND with a 0.01 µF capacitor (1-101-004-00).
   (Minimizing the REC ATF level)
3) Connect Collector (Pin ① : R256 side) of Q251 and GND with a jumper wire.
   (Minimizing the REC AFM level)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 00
2) After memorizing each data of address: 5C to address: 5F of page: D, set data: 00 to each address.
   (Minimizing the 2CH REC C current level)

• ME tape Hi8 mode (ME E mode) adjustment

3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch in the menu display is at "Auto".
5) Change the data of page: D, address: 30, and adjust so that REC C RF level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch in the menu display is at "Auto".
9) Change the data of page: D, address: 31, and adjust so that the REC C RF level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

11) Turn the Hi8 switch in the menu display off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 32, and adjust so that the REC C RF level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch to "Auto".

• MP tape normal mode (MP L mode) adjustment

16) Insert the normal MP tape, and set the record mode.
17) Change the data of page: D, address: 33, and adjust so that the REC C RF level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.

• LP mode adjustment

19) Set data to address: 60, 61, 62, 63 of page: D as shown in the following table.
    (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
34	Same data as address: 30
35	Same data as address: 31
36	Same data as address: 32
37	Same data as address: 33

• Processing after adjustments

20) Set the data memorized at step 2) to each address from address: 5C to address: 5F of page: D. and press the PAUSE button of the adjusting remote control unit.

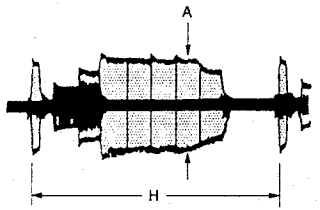


Fig. 9-27.

20. CH2 REC C Current Adjustment (SA-49 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑥ of CN001 (REC 2CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5C (REC 2CH (ME E SP)) 5D (REC 2CH (MP E SP)) 5E (REC 2CH (ME L SP)) 5F (REC 2CH (MP L SP)) 60 (REC 2CH (ME E LP)) 61 (REC 2CH (MP E LP)) 62 (REC 2CH (ME L LP)) 63 (REC 2CH (MP L LP))
Specified Value	ME tape Hi8 mode (ME E) A=58 ± 2 mVp-p Hi8 MP tape Hi8 mode (MP E) A=32 ± 2 mVp-p ME tape normal mode (ME L) A=38 ± 2 mVp-p MP tape normal mode (MP L) A=38 ± 2 mVp-p

Note: Check that the "REC MODE" switch in the menu display is at "SP".

Connection

1) Connect Pin ③ of W120 (REC Y RF) and pin ㊺ of W120 (VI 5V) with a jumper wire.
   (Minimizing the REC Y RF level)
2) Connect Pin ⑨ of IC124 and GND with a 0.01 μF capacitor (1-101-004-00).
   (Minimizing the REC ATF level)
3) Connect Collector (Pin ① : R256 side) of Q251 and GND with a jumper wire.
   (Minimizing the REC AFM level)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 00
2) After memorizing each data of address: 30 to address: 33 of page: D, set data: 00 to each address.
   (Minimizing the 1CH REC C current level)

• ME tape Hi8 mode (ME E mode) adjustment

3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch in the menu display is at "Auto".
5) Change the data of page: D, address: 5C, and adjust so that REC C RF level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch in the menu display is at "Auto".
9) Change the data of page: D, address: 5D, and adjust so that the REC C RF level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

11) Turn the Hi8 switch in the menu display off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 5E, and adjust so that the REC C RF level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch to "Auto".

• MP tape normal mode (MP L mode) adjustment

16) Insert the normal MP tape, and set the record mode.
17) Change the data of page: D, address: 5F, and adjust so that the REC C RF level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.

• LP mode adjustment

19) Set data to address: 60, 61, 62, 63 of page: D as shown in the following table.
    (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
60	Same data as address: 5C
61	Same data as address: 5D
62	Same data as address: 5E
63	Same data as address: 5F

• Processing after adjustments

20) Set the data memorized at step 2) to each address from address: 30 to address: 33 of page: D. and press the PAUSE button of the adjusting remote control unit.

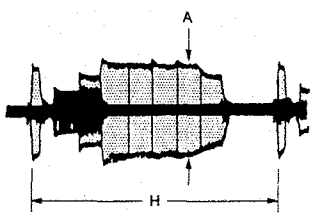


Fig. 9-28.

21. CH1 REC PCM Current Adjustment (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8C (REC PCM 1CH (ME E)) 8D (REC PCM 1CH (MP E)) 8E (REC PCM 1CH (ME L)) 8F (REC PCM 1CH (MP L))
Specified Value	ME tape Hi8 mode (ME E) A=210 ± 5 mVp-p Hi8 MP tape Hi8 mode (MP E) A=165 ± 5 mVp-p ME tape normal mode (ME L) A=200 ± 5 mVp-p MP tape normal mode (MP L) A=200 ± 5 mVp-p

Connection

1) Connect pin ③ of W120 (REC Y RF) and pin ㊺ of W120 (VI 5V) with a jumper wire.
   (Minimizing the REC Y RF level)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01

• ME tape Hi8 mode (ME E mode) adjustment

2) Insert the ME tape, and set the record mode.
3) Check that the Hi8 switch in the menu display is at "Auto".
4) Change the data of page: D, address: 8C, and adjust so that REC PCM level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

6) Insert the Hi8 MP tape, and set the record mode.
7) Check that the Hi8 switch in the menu display is at "Auto".
8) Change the data of page: D, address: 8D, and adjust so that the REC PCM level (A) becomes the specified value.
9) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

10) Turn the Hi8 switch in the menu display off.
11) Insert the ME tape, and set the record mode.
12) Change the data of page: D, address: 8E, and adjust so that the REC Y level (A) becomes the specified value.
13) Press the PAUSE button of the adjusting remote control unit.
14) Set the Hi8 switch in the menu display to "Auto".

• MP tape normal mode (MP L mode) adjustment

15) Insert the normal MP tape, and set the record mode.
16) Change the data of page: D, address: 8F, and adjust so that the REC PCM level (A) becomes the specified value.
17) Press the PAUSE button of the adjusting remote control unit.

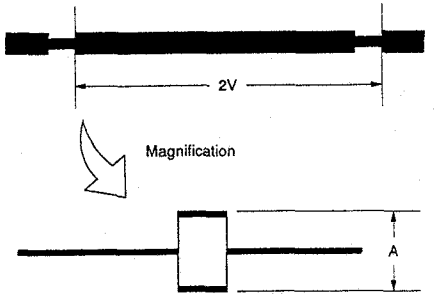


Fig. 9-29.

22. CH2 REC PCM Current Adjustment (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN001 (REC 2CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	90 (REC PCM 2CH (ME E)) 91 (REC PCM 2CH (MP E)) 92 (REC PCM 2CH (ME L)) 93 (REC PCM 2CH (MP L))
Specified Value	ME tape Hi8 mode (ME E) A=210 ± 5 mVp-p Hi8 MP tape Hi8 mode (MP E) A=165 ± 5 mVp-p ME tape normal mode (ME L) A=200 ± 5 mVp-p MP tape normal mode (MP L) A=200 ± 5 mVp-p

Connection

1) Connect pin ③ of W120 (REC Y RF) and pin ㊺ of W120 (VI 5V) with a jumper wire.
(Minimizing the REC Y RF level)

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01

• ME tape Hi8 mode (ME E mode) adjustment

2) Insert the ME tape, and set the record mode.
3) Check that the Hi8 switch in the menu display is at "Auto".
4) Change the data of page: D, address: 90, and adjust so that REC PCM level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

• Hi8 MP tape Hi8 mode (MP E mode) adjustment

6) Insert the Hi8 MP tape, and set the record mode.
7) Check that the Hi8 switch in the menu display is at "Auto".
8) Change the data of page: D, address: 91, and adjust so that the REC PCM level (A) becomes the specified value.
9) Press the PAUSE button of the adjusting remote control unit.

• ME tape normal mode (ME L mode) adjustment

10) Turn the Hi8 switch in the menu display off.
11) Insert the ME tape, and set the record mode.
12) Change the data of page: D, address: 92, and adjust so that the REC PCM level (A) becomes the specified value.
13) Press the PAUSE button of the adjusting remote control unit.
14) Set the Hi8 switch in the menu display to "Auto".

• MP tape normal mode (MP L mode) adjustment

15) Insert the normal MP tape, and set the record mode.
16) Change the data of page: D, address: 93, and adjust so that the REC PCM level (A) becomes the specified value.
17) Press the PAUSE button of the adjusting remote control unit.

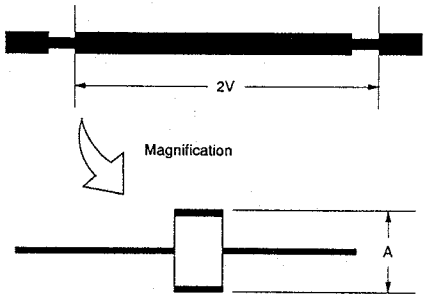


Fig. 9-30.

23. REC ATF Level Check (SA-49 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	ME tape A=16.5 ± 3.0 mVp-p MP tape A=10.0 ± 2.0 mVp-p

Note: Check that the "REC MODE" switch in the menu display is at "SP".

Connection

1) Connect Pin ③ of W120 (REC Y RF) and pin ㊺ of W120 (VI 5V) with a jumper wire.
(Minimizing the REC Y RF level)
2) Connect Collector (Pin ① : R256 side) of Q251 and GND with a jumper wire.
(Minimizing the REC AFM level)

Checking method:

1) Insert the ME tape, and set the record mode.
2) Check that the REC ATF level (A) is satisfies the specified value.
3) Insert the MP tape, and set the record mode.
4) Check that the REC ATF level (A) is satisfies the specified value.

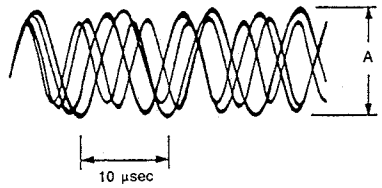


Fig. 9-31.

24. REC AFM Level Check (SA-49 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	ME tape A=15.0 ± 3.0 mVp-p MP tape A=9.0 ± 2.0 mVp-p

Note 1: Do not insert anything into the right audio input terminal.

Note 2: Check that the "REC MODE" switch in the menu display is at "SP".

Connection

1) Connect Pin ③ of W120 (REC Y RF) and pin ㊺ of W120 (VI 5V) with a jumper wire.
(Minimizing the REC Y RF level)
2) Connect Pin ⑦ of IC124 and GND with a 0.01 µF capacitor (1-101-004-00). (Minimizing the REC ATF level)

Checking method:

1) Insert the ME tape, and set the record mode.
2) Check that the REC AFM level (A) is satisfies the specified value.
3) Insert the MP tape, and set the record mode.
4) Check that the REC AFM level (A) is satisfies the specified value.

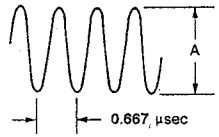


Fig. 9-32.

25. E-E VIDEO OUT Level Adjustment

Mode	Camera standby
Signal	Color bar (S VIDEO) (Note 1)
Measurement Point	VIDEO output terminal (Note 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	94 (Y LEVEL (EE))
Specified Value	A=0.70 ± 0.25V

Note 1: Disconnect CN751 of VC-116 board and input the Y signal and Chroma signal as shown Fig. 9-32.

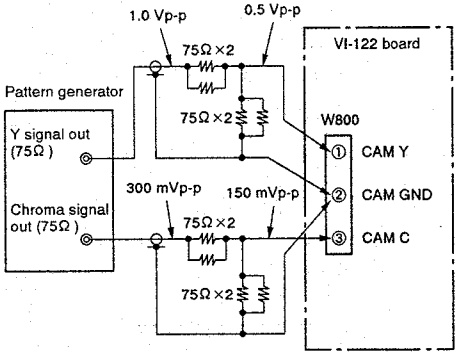


Fig. 9-33.

Note 2: Terminate the VIDEO output terminal at 75Ω .

Adjusting method:

1) Releast the protect.
   Page: 1, address: 00, data: 01.
2) Change the data of page: D, address: 94, and adjust so that the E-E video signal level (A) becames the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

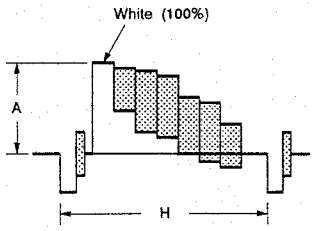


Fig. 9-34.

26. E-E S VIDEO OUT Chroma Level Adjustment

Mode	Camera standby
Signal	Color bar (S VIDEO) (Note 1)
Measurement Point	Chroma signal terminal of S VIDEO terminal (Note 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	98 (C OUT LEVEL (EE))
Specified Value	A=300 ± 10 mVp-p

Note 1: Disconnect CN751 of VC-116 board and input the Y signal and Chroma signal as shown Fig. 9-33.

Note 2: Terminate the Chroma signal terminal of S VIDEO terminal at 75Ω .

Adjusting method:

1) Releast the protect.
   Page: 1, address: 00, data: 01.
2) Change the data of page: D, address: 98, and adjust so that the E-E burst signal level (A) becames the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

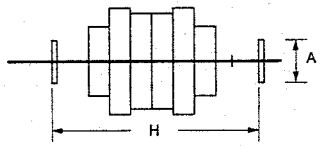


Fig. 9-34.

27. E-E S VIDEO OUT Y Level Adjustment

Mode	Camera standby
Signal	Y Signal of color bar (Note 1)
Measurement Point	Y signal terminal of S VIDEO terminal (Note 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	96 (Y OUT LEVEL (EE))
Specified Value	A=0.70 ± 0.025V

Note 1: Disconnect CN751 of VC-116 board and input the Y signal and Chroma signal as shown Fig. 9-33.

Note 2: Terminate the Y signal terminal of S VIDEO terminal at 75Ω .

Adjusting method:

1) Releast the protect.
   Page: 1, address: 00, data: 01.
2) Change the data of page: D, address: 96, and adjust so that the E-E Y signal level (A) becames the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

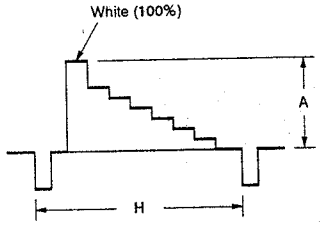


Fig. 9-36.

28. Playback S VIDEO OUT Y Level Adjustment

Mode	Recording and playback (Hi8 mode)
Signal	Color bar
Measurement Point	Y signal terminal of S VIDEO terminal (Note 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	97 (Y OUT LEVEL (PB))
Specified Value	A=0.70 ± 0.025V

Note 1: Terminate the Y signal terminal of S VIDEO terminal at 75Ω during playback mode.

Note 2: Use a ME or Hi8 MP tape, and check that the "Hi8" switch in the menu display is at "Auto".

Adjusting method:

1) Input the color bar signal
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Releast the protect.
   Page: 1, address: 00, data: 01.
6) Change the data of page: D, address: 97, and adjust so that the playback Y signal level (A) becames the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

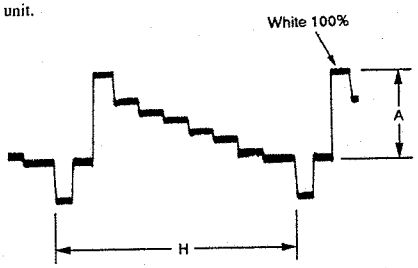


Fig. 9-37.

29. Playback S VIDEO OUT Chroma Level Adjustment

Mode	Recording and playback (Hi8 mode)
Signal	Color bar
Measurement Point	Chroma signal terminal of S VIDEO terminal (Note 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	99 (C OUT LEVEL (PB))
Specified Value	A=300 ± 10 mVp-p

Note 1: Terminate the chroma signal terminal of S VIDEO terminal at 75Ω during playback mode.

Note 2: Use a ME or Hi8 MP tape, and check that the "Hi8" switch in the menu display is at "Auto".

Adjusting method:

1) Input the color bar signal
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Releast the protect.
   Page: 1, address: 00, data: 01.
6) Change the data of page: D, address: 99, and adjust so that the playback burst signal level (A) becames the specified value. (Note 1)
7) Press the PAUSE button of the adjusting remote control unit.

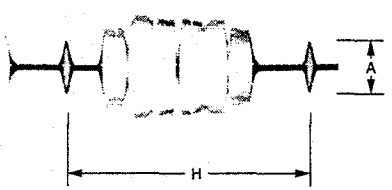


Fig. 9-38.

30. Playback VIDEO OUT Level Adjustment

Mode	Recording and playback (Hi8 mode)
Signal	Color bar
Measurement Point	VIDEO terminal (Note 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	95 (Y LEVEL (PB))
Specified Value	A=0.70 ± 0.025V

Note 1: Terminate the VIDEO terminal at 75Ω in the playback mode.

Note 2: Use a ME or Hi8 MP tape, and check that the "Hi8" switch in the menu display is at "Auto".

Adjusting method:

1) Input the color bar signal
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Releast the protect.
   Page: 1, address: 00, data: 01.
6) Change the data of page: D, address: 95, and adjust so that the video signal level (A) becames the specified value. (Note 1)
7) Press the PAUSE button of the adjusting remote control unit.

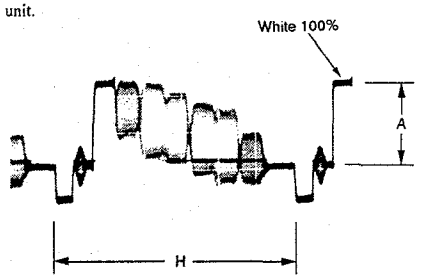


Fig. 9-39.

31. YD Adjustment (VI-122 board)

Mode	Playback
Signal	Color bar tape with dropout (Note 1)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	66 (YD ADJ)
Specified Value	Dropout section should be flat

Note 1: A tape with continuous dropout is made by scratching the magnetic section of a color bar tape which is running with the tip of a precision driver.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 66, and flatten the dropout section.
3) Press the PAUSE button of the adjusting remote control unit.

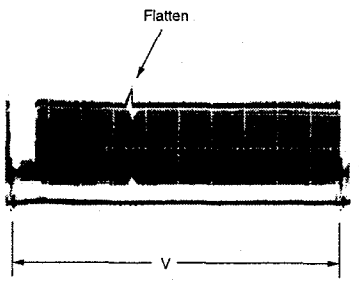


Fig. 9-40.

32. Quasi Burst Phase Adjustment (VI-122 Board)

Mode	Playback and playback pause
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV551
Specified Value	± 45°

Connection:

1) Input 4.43 MHz signal from Emitter of Q619 (Pin ⑫ of IC556) to CH1 input of the oscilloscope.
2) Connect CH1 output of the oscilloscope to the EXT. subcarrier reference input of the vectorscope.
3) Turn on the EXT. subcarrier switch of the vectorscope.

Adjusting method:

1) Playback the color bar section.
2) Adjust the burst phase to ± 45° with PHASE knob of the vectorscope.
3) Set up playback pause mode.
4) Adjust the burst phase to ± 45° with RV551.

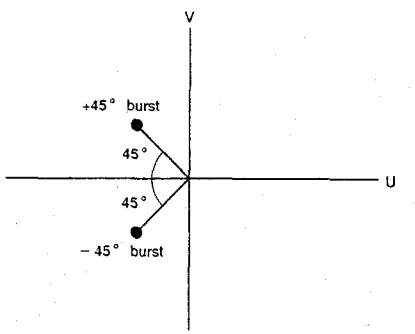


Fig. 9-41.

33. Delay Burst Phase Adjustment (VI-122 Board)

Mode	Playback pause
Signal	Alignment tape: For operation check (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	67 (PAL JOG)
Specified Value	Minimum shaking of yellow and blue luminance points

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 67, and minimize the shaking of yellow and blue luminance points.
3) Press the PAUSE button of the adjusting remote control unit.

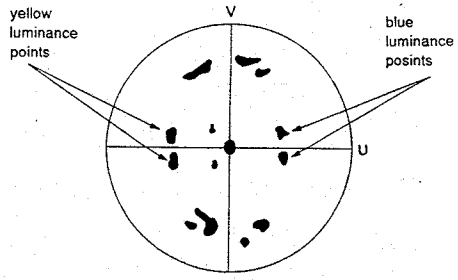


Fig. 9-42.

34. Title A/D Threashold Level Adjustment (VI-122 board)

Mode	Camera standby
Signal	Staircase (Note 1)
Measurement Point	CH1: Pin ㊺ of IC807 (Y IN) CH2: Pin ㊽ of IC807 (Y BLK)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	51 (TITLE THRESH)
Specified Value	A=0.105 ± 0.035V

Note 1: Disconnect CN751 of VC-116 board, and input the staircase signal as shown Fig. 9-43.

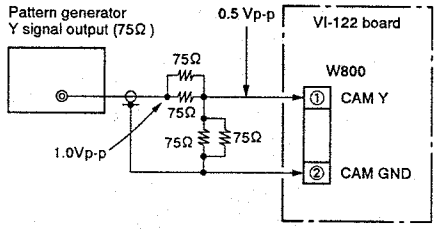


Fig. 9-43.

Adjusting method:

1) Press the TITLE 1 button.
2) Press the MEMORY button.
3) Release the protect.
   Page: 1, address: 00, data: 01
4) Adjust the threashold level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

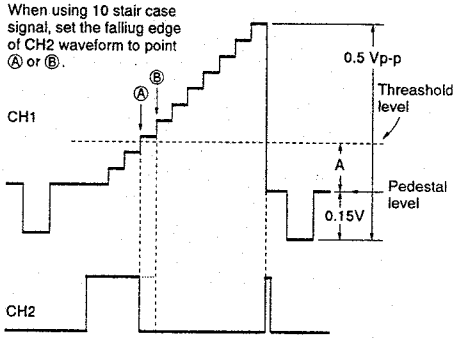


Fig. 9-44.

35. E-E Title Chroma Phase Adjustment (VI-122 board)

Mode	Camera standby
Subject	All black (Cover lens with black cap)
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vertorscope
Adjustment Element	RV800
Specified Value	θ =0° ± 4°

Adjusting Method:

1) Press DATA SCREEN button.
2) Press TITLE 1 button.
3) Press MEMORY button.
4) Press COLOR/MODE button untill "VIO" (Violet) displayed on the monitor TV screen.
5) Adjust RV800 so that the phase (θ) of the violet luminance point becames the specified value.
   (Vectorscope: NTSC mode)

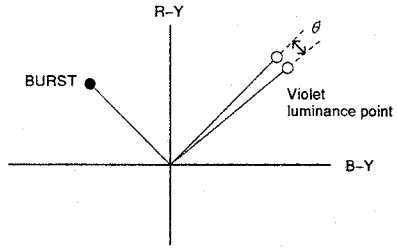


Fig. 9-45.

36. CNR Chroma Input Level Adjustment (CR-42 board)

Mode	Playback
Subject	Alignment tape: For operation check Color bar section
Measurement Point	Pin ⑱ of IC002 or Emitter of Q010
Measuring Instrument	Oscilloscope
Adjustment Element	RV002
Specified Value	A=550 ± 10 mVp-p

Adjusting Method:

1) Adjust the burst level (A) to the specified value.

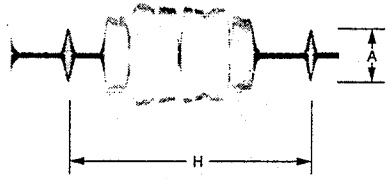


Fig. 9-46.

37. Playback Title Chroma Phase Adjustment (CR-42 board)

Mode	Playback
Subject	Tape with the color signal recorded
Measurement Point	Video input/output terminal
Measuring Instrument	Vectorscope
Adjustment Element	RV003
Specified Value	θ =0° ± 4°

Preparations:
1) Set POWER switch to "CAMERA".
2) Turn on STANDBY switch.
3) Cover the lens with a black cap.
4) Press TITLE 1 button.
5) Press MEMRY button.
6) Set POWER switch to "VTR".

Adjusting method:
1) Playback a tape with the color signal recorded.
2) Press DATA SCREEN button.
3) Press TITLE 1 button.
4) Press COLOR/MODE button untill "VIO" is displayed on the monitor TV screen.
5) Adjust RV003 so that the plase (θ) of the violet luminance point becames the specified value.

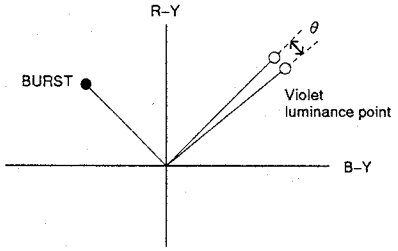


Fig. 9-47.

38. Character Generator fo Adjustment (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑳ of IC400
Measuring Instrument	Frequency counter
Adjustment Element	CT400
Specified Value	f=15675 ± 50 Hz

Adjusting method:
1) Adjust CT400 so that the frequency becames the specified value.

9-6. INDEX MARKER SYSTEM ADJUSTMENT

1. Playback VCO Free Oscillation Frequency Adjustment (SA-49 board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑧ of IC350
Measuring Instrument	Frequency counter
Adjustment Element	RV351
Specified Value	11.50 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Connection:
1) Connect Pins ① and ⑥ of IC350 with a jumper wire.
2) Connect the Q352 collector and GND with a jumper wire.

Adjusting method:
1) Adjust RV351 so that the oscillation frequency becames the specified value.

2. REC PCM Level Check (SA-49 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ㊽ of IC003
Measuring Instrument	Oscilloscope
Specified Value	A=300 ± 50 mVp-p

Checking method:
1) Check that the REC PCM RF level (A) satisfies the specified value.

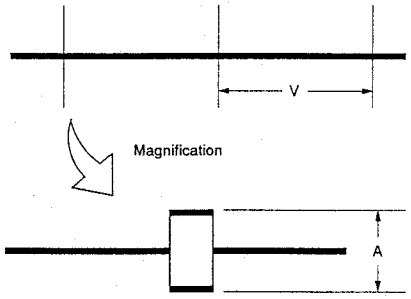


Fig. 9-48.

9-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.
- Unless specified otherwise, use a Hi8 ME tape.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 9-49, and perform adjustments at the power switch [VTR (or PLAYER)] position.
Switch the input/output switchover switch in accordance with the mode as follows.
- Recording mode····Input position
- Playback mode ·····Output position

When the input/output select switch is not installed, connect pin ㉑ (JACK $\overline{IN}$/OUT) of W801 on VI-122 board and GND with a jumper wire during recording mode.

Set the Hi-Fi SOUND switch in the menu display to the following position unless specified otherwise.
- Stereo position

Note: 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.
2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording ·· REC AFM RF1.7 MHz carrier will not be output.
During playback ·· The L+R signal will be output from the audio input/output terminal (left).
3) The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.

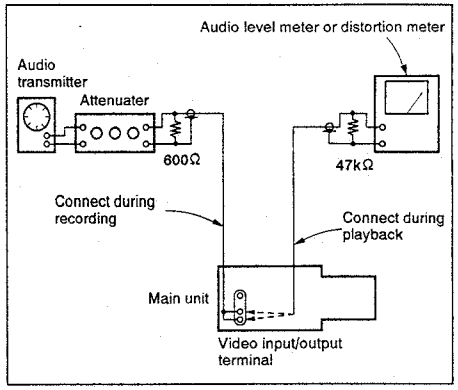


Fig. 9-49.

[Adjustment Procedure]
1) 1.5 MHz carrier frequency check
2) 1.7 MHz carrier frequency check
3) E-E output level check
4) REC matrix L-R check
5) REC matrix L+R check
6) IR adjustment
7) 1.5 MHz deviation adjustment
8) 1.7 MHz deviation adjustment
9) PB matrix L adjustment
10) PB matrix R adjustment
11) Overall level characteristics, distortion check
12) Separation check
13) Overall noise level check

1. 1.5 MHz Carrier Frequency Check (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC250
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

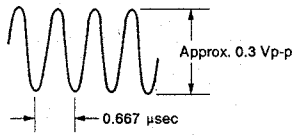


Fig. 9-50.

2. 1.7 MHz Carrier Frequency Check (SA-49 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC253
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.700 ± 0.002 MHz

Note: 1) Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.
2) Insert a shorting plug into the audio input terminal (right).

Checking method:

1) Check that the 1.7 MHz carrier frequency satisfies the specified value.

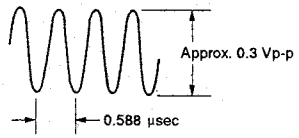


Fig. 9-51.

3. E-E Output Level Check (SA-49 board)

Mode	Record
Signal	400 Hz, –7.5 dBs audio input terminal right [left]
Measurement Point	Pin ⑲ of IC250 or Pin ⑧ of IC252 [Pin ⑲ of IC253 or Pin ② of IC252]
Measuring Instrument	Oscilloscope
Specified Value	$925\ ^{+240}_{-190}$ mVp-p (–7.5 ± 2 dBs)

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

4. REC Matrix L-R Adjustment (SA-49 board)

Mode	Record
Signal	400 Hz, –7.5 dBs Input to both left and right terminals of the audio input terminal
Measurement Point	Pin ㉑ of IC253 or Pin ③ of IC251
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (REC/PB MX (REC))
Specified Value	0 ± 5 mVp-p

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 78, and minimize the 400 Hz signal level.
3) Press the PAUSE button of the adjusting remote control unit.

5. REC Matrix L+R Check (SA-49 board)

Mode	Record
Signal	1. 400 Hz, –7.5 dBs: Audio input terminal left No signal: Audio input terminal right 2. No signal: Audio input terminal left 400 Hz, –7.5 dBs: Audio input terminal right
Measurement Point	Pin ㉑ of IC250 or Pin ㉕ of IC251
Measuring Instrument	Oscilloscope
Specified Value	The level difference is 0 ± 10 mVp-p when only the left terminal is input and when only the right terminal is input.

Note: When measuring the signal level of pin ㉑ of IC250, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Read the 400 Hz signal level of pin ㉑ of IC250, and take it down. (Approximately 200 mVp-p)
3) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
4) Check that the 400 Hz signal level of pin ㉑ of IC250 is (the value that was taken down at step 2) ± 10 mVp-p.

6. IR Adjustment (SA-49 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS)
Measurement Point	Pins ㊹ and ⑥ of IC250 (1.5 MHz IR) Pins ㊹ and ⑥ of IC253 (1.7 MHz IR)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR), 7C (1.7 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
- 1.5 MHz IR adjustment
2) Connect the digital voltmeter to pin ㊹ of IC250, and read the voltage. (Approximately 2100 mVdc)
3) Connect the digital voltmeter to pin ⑥ of IC250.
4) Change the data of page: D, address: 7A, and adjust so that the voltage of pin ⑥ of IC250 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
5) Press the PAUSE button of the adjusting remote control unit.
- 1.7 MHz IR adjustment
6) Connect the digital voltmeter to pin ㊹ of IC253, and read the voltage. (Approximately 2100 mVdc)
7) Connect the digital voltmeter to pin ⑥ of IC253.
8) Change the data of page: D, address: 7C, and adjust so that the voltage of pin ⑥ of IC253 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
9) Press the PAUSE button of the adjusting remote control unit.

7. 1.5 MHz Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal left or right
Measuring Instrument	Oscilloscope, Level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

8. 1.7 MHz Deviation Adjustment (SA-49 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS) Bilingual (Monoscope) section
Measurement Point	1. Pin ㉝ of IC250 or Pin ㉘ of IC251 2. Pin ㉝ of IC253 or Pin ㉘ of IC251
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ± 0.05 graduation

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Connect the oscilloscope to pin ㉝ of IC250.
3) Adjust the 400 Hz signal amplitude to the 8.0 graduation using the VOLT/DIV knob of the oscilloscope.
4) Connect the oscilloscope to pin ㉝ of IC253.
5) Change the data of page: D, address: 7D, and adjust so that the 1 kHz signal level becomes 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)
6) Press the PAUSE button of the adjusting remote control unit.

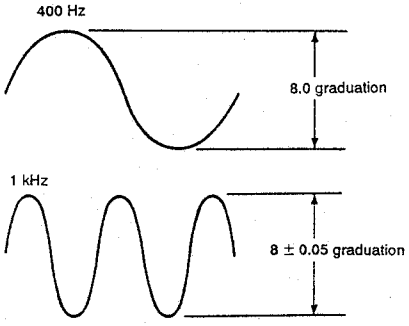


Fig. 9-52.

9. PB Matrix L Adjustment

Mode	Self recording/playback
Signal	No signal: Audio input terminal (left) 400 Hz, –7.5 dBs: Audio input terminal (right)
Measurement Point	Pin ⑲ of IC250 or Pin ⑧ of IC252
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	79 (REC/PB MX (PB))
Specified Value	Below 20 mVp-p

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
3) Record.
4) Remove the input signal.
5) Playback the recorded section.
6) Change the data of page: D, address: 79, and minimize the cross talk component (400 Hz).
7) Press the PAUSE button of the adjusting remote control unit.

10. PB Matrix R Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) No signal: Audio input terminal (right)
Measurement Point	Pin ⑲ of IC253 or Pin ② of IC252
Measuring Instrument	Oscilloscope
Specified Value	Below 30 mVp-p

Checking method:
1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Record.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk component (400 Hz) is below 30 mVp-p.

11. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 3 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 30 kHz low-path filter is used

Checking method:
1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal, and set the input/output select switch to [out].
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 3 dBs, and that the distortion rate is below 0.8% (Note 2).

12. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:
1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal, and set the input/output select switch to [out].
4) Playback the recorded section.
5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below –27.5 dBs.

13. Overall Noise Level Check

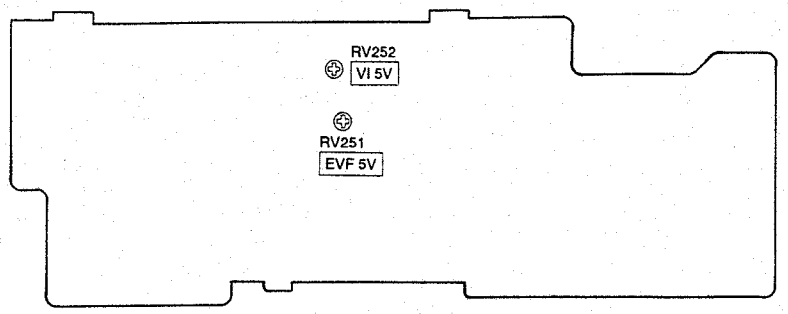
Mode	Self recording
Signal	No signal: Audio input terminal left and right
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –61.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

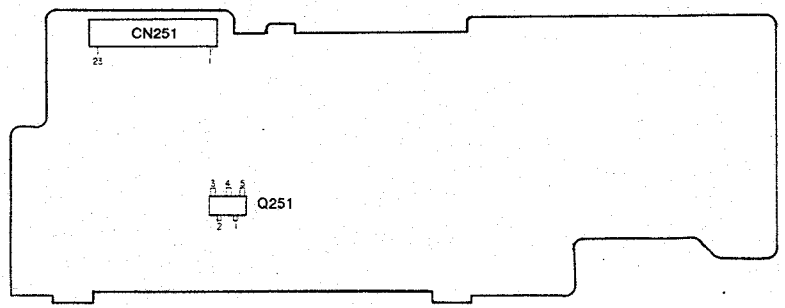
Checking method:
1) Insert the shorting plug to both left and right of the audio input terminals.
2) Record.
3) Remove the shorting plug, and set the input/output select switch to [out].
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal (left) [right] is below –61.5 dBs.

9-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

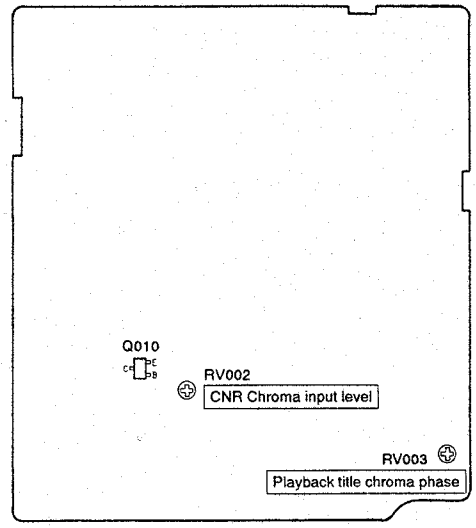
FU-107 BOARD (COMPONENT SIDE)



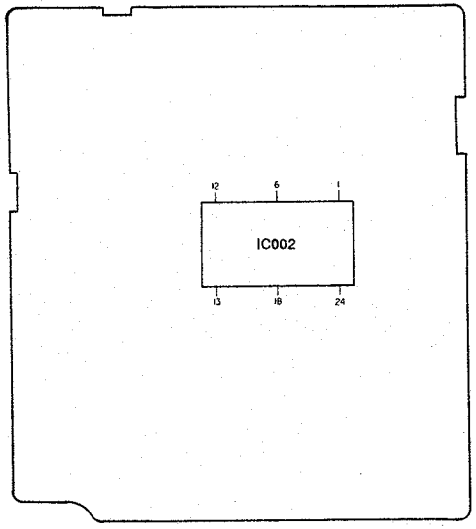
FU-107 BOARD (CONDUCTOR SIDE)



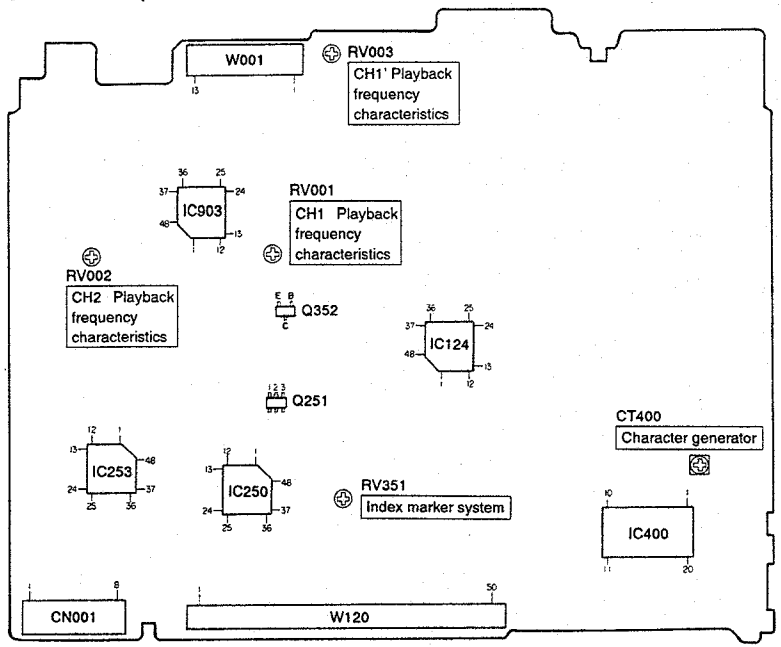
CR-42 BOARD (COMPONENT SIDE)



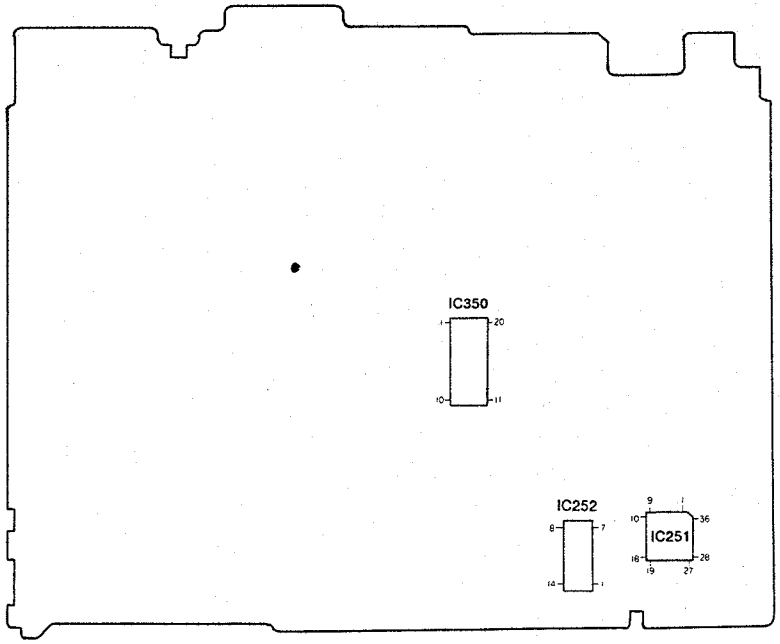
CR-42 BOARD (CONDUCTOR SIDE)



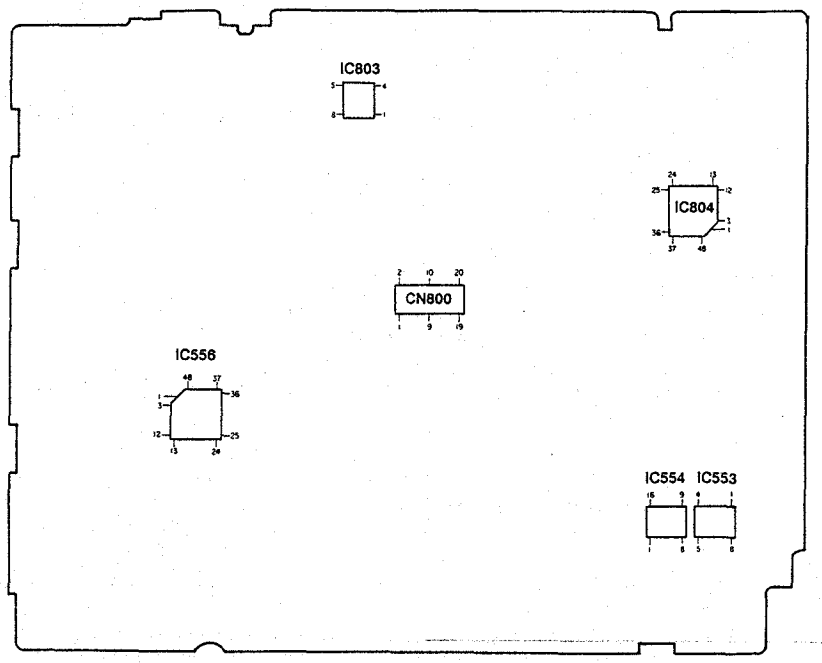
SA-49 BOARD (COMPONENT SIDE)



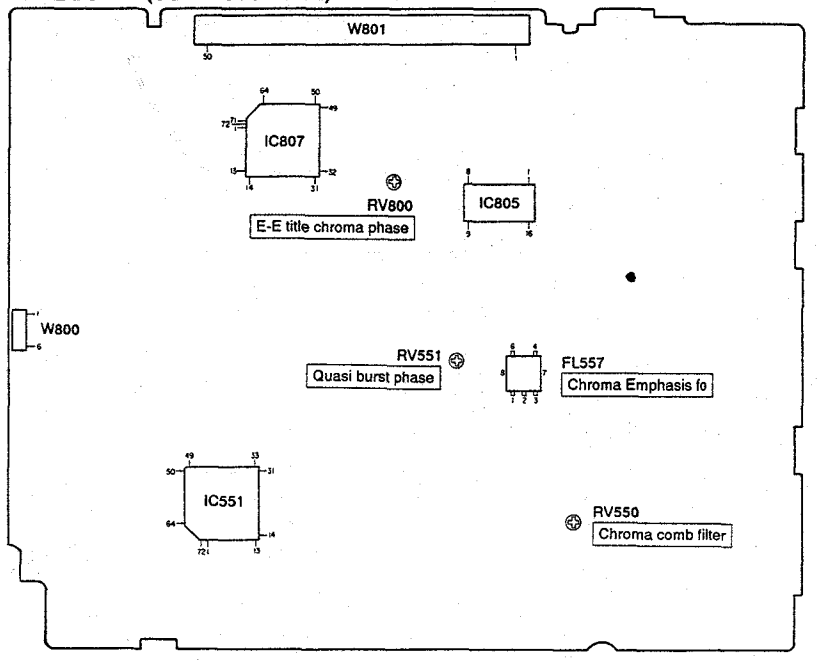
SA-49 BOARD (CONDUCTOR SIDE)



VI-122 BOARD (COMPONENT SIDE)



VI-122 BOARD (CONDUCTOR SIDE)



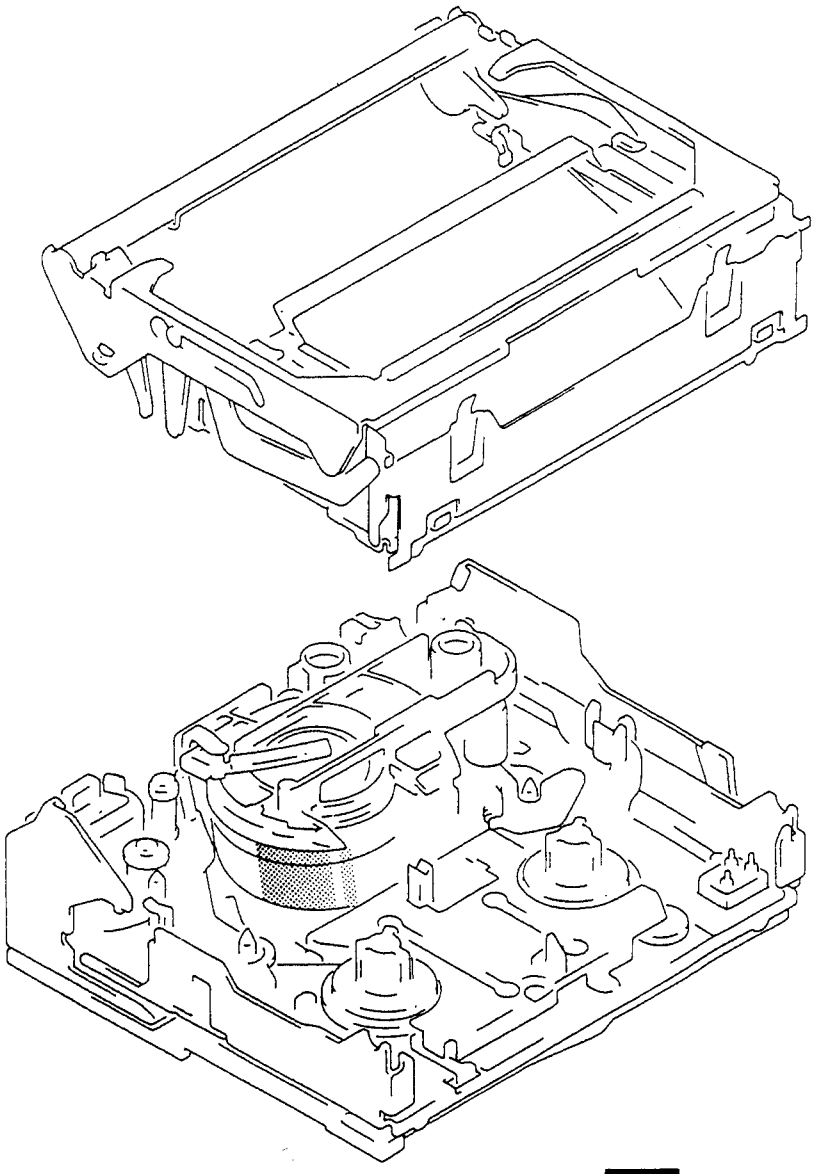
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm 1 toward the arrow Ⓐ to unlock from lock guide 2, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws 3 and remove the LS frame 4 toward the arrow Ⓑ.
4) With the cassette compartment assembly 5 pushed in arrow Ⓒ direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow Ⓓ to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively. In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly 5 in the opposite direction of arrow Ⓒ until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow Ⓓ to remove the cassette compartment assembly.

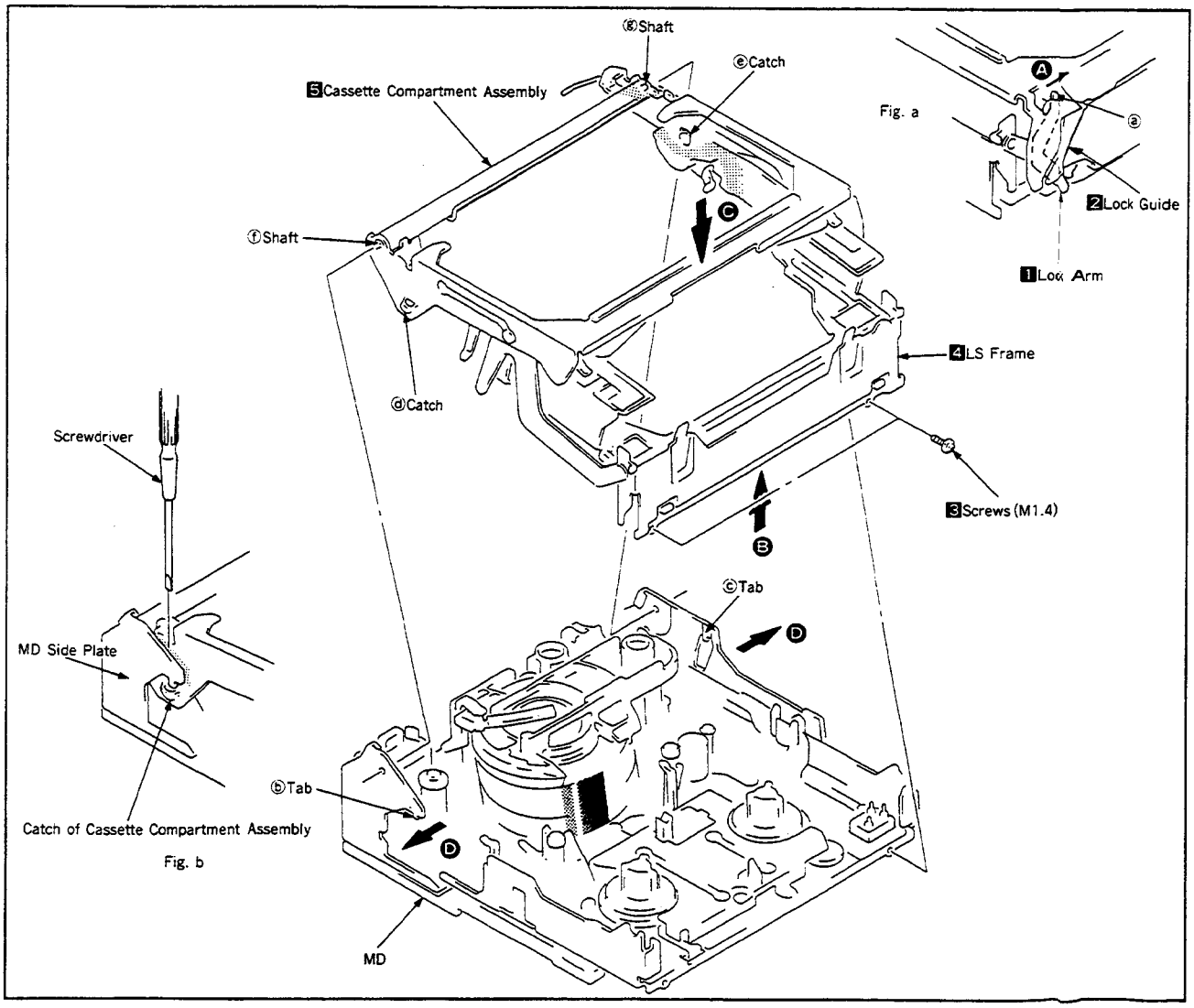


Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder 6 of cassette compartment assembly 5 toward the arrow E, and lower the LS frame 4 toward the arrow F.
3) With the cassette compartment assembly 5 tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓙ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly 5 so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm 1 of cassette compartment assembly must be inserted into a groove in the guide rail 7 on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame 4 inside the LS chassis 8.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws 3.

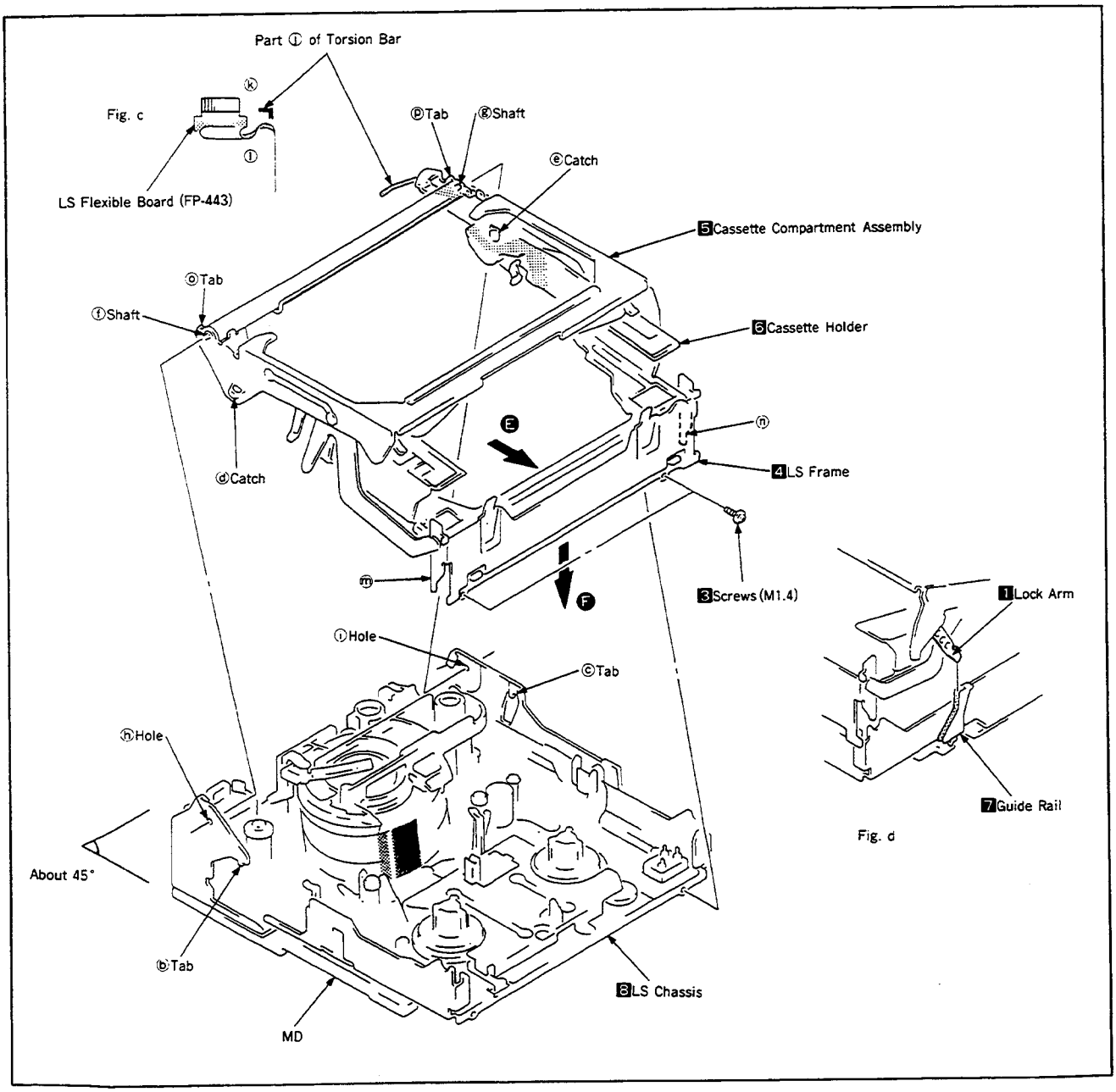


Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

Note : Press the asterisked (*) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

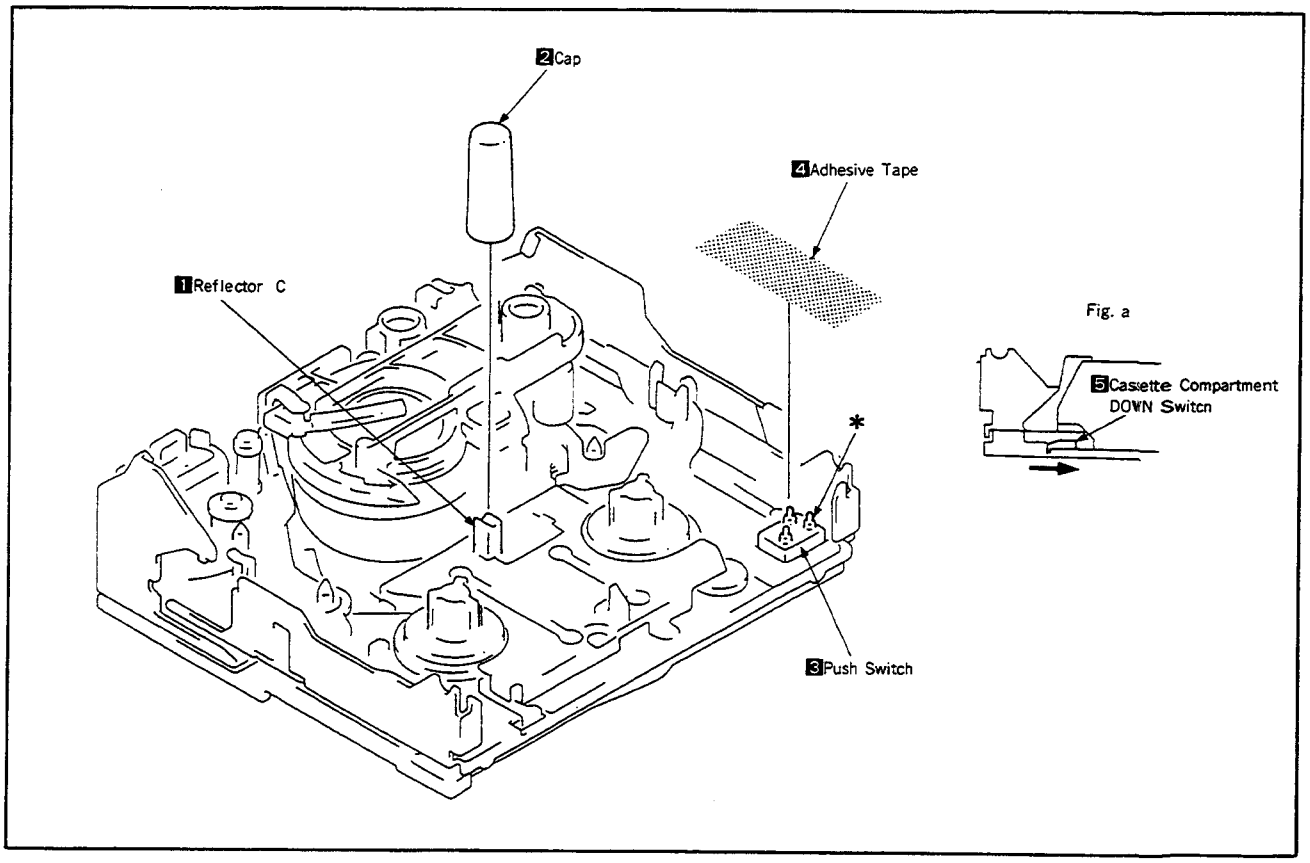


Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector 1 and M-SW connector 2 into the mode selector IV conversion connector 3 respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

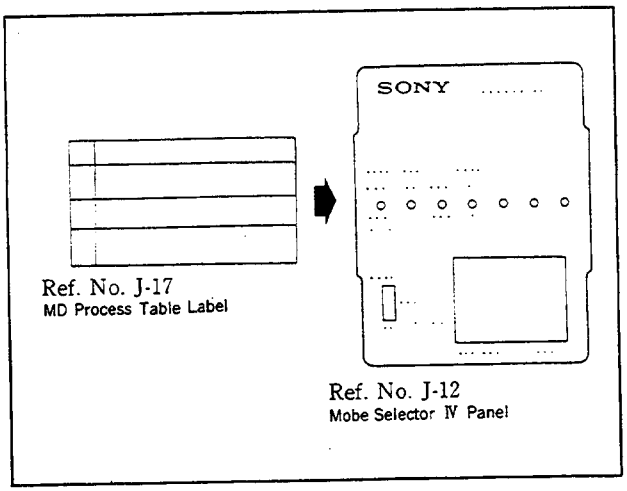


Fig. 4

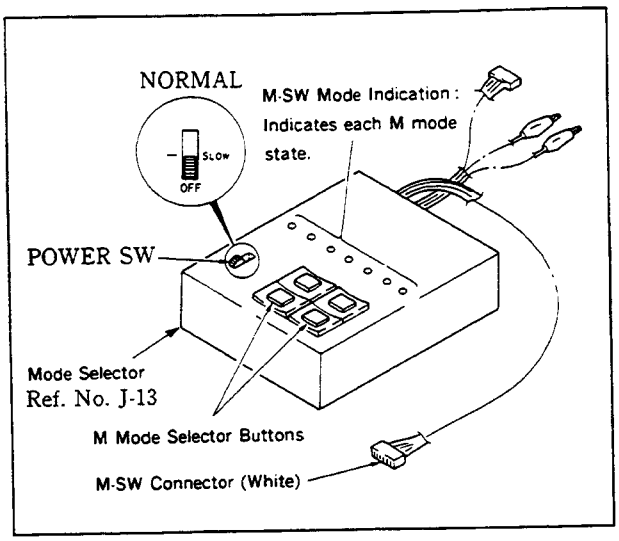


Fig. 5

For CCD-FX410 series

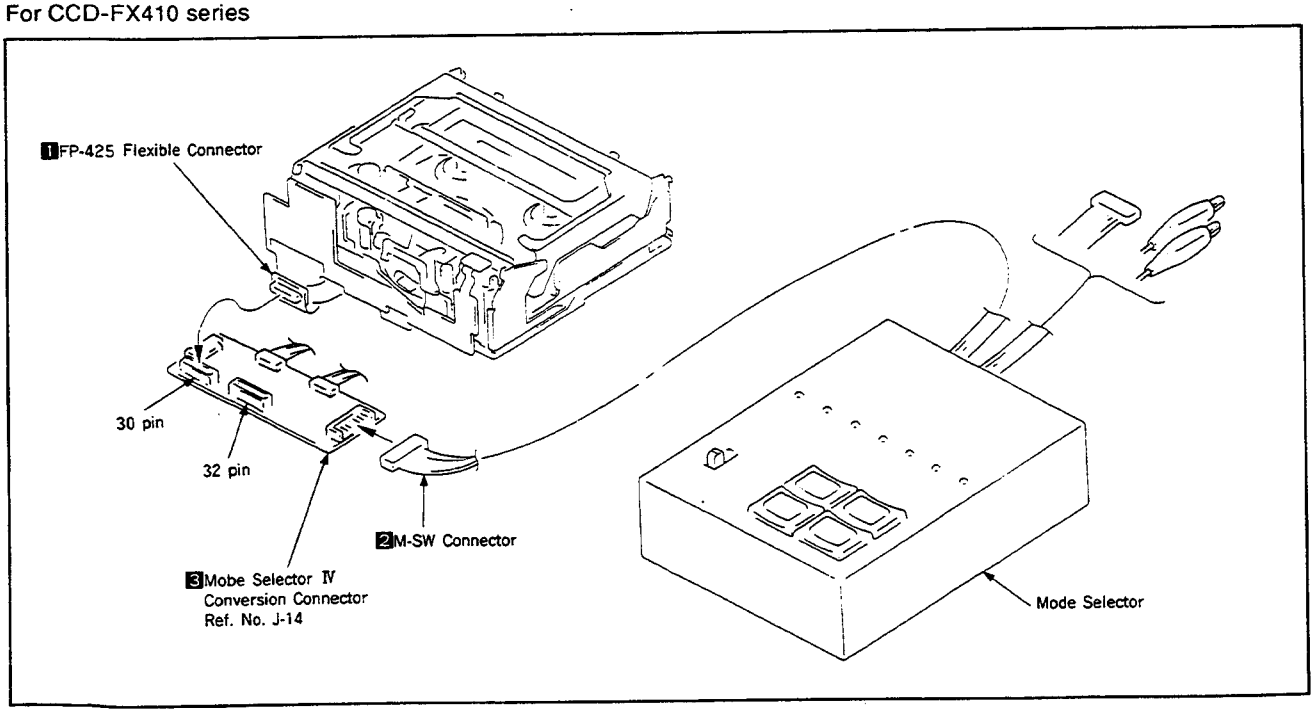
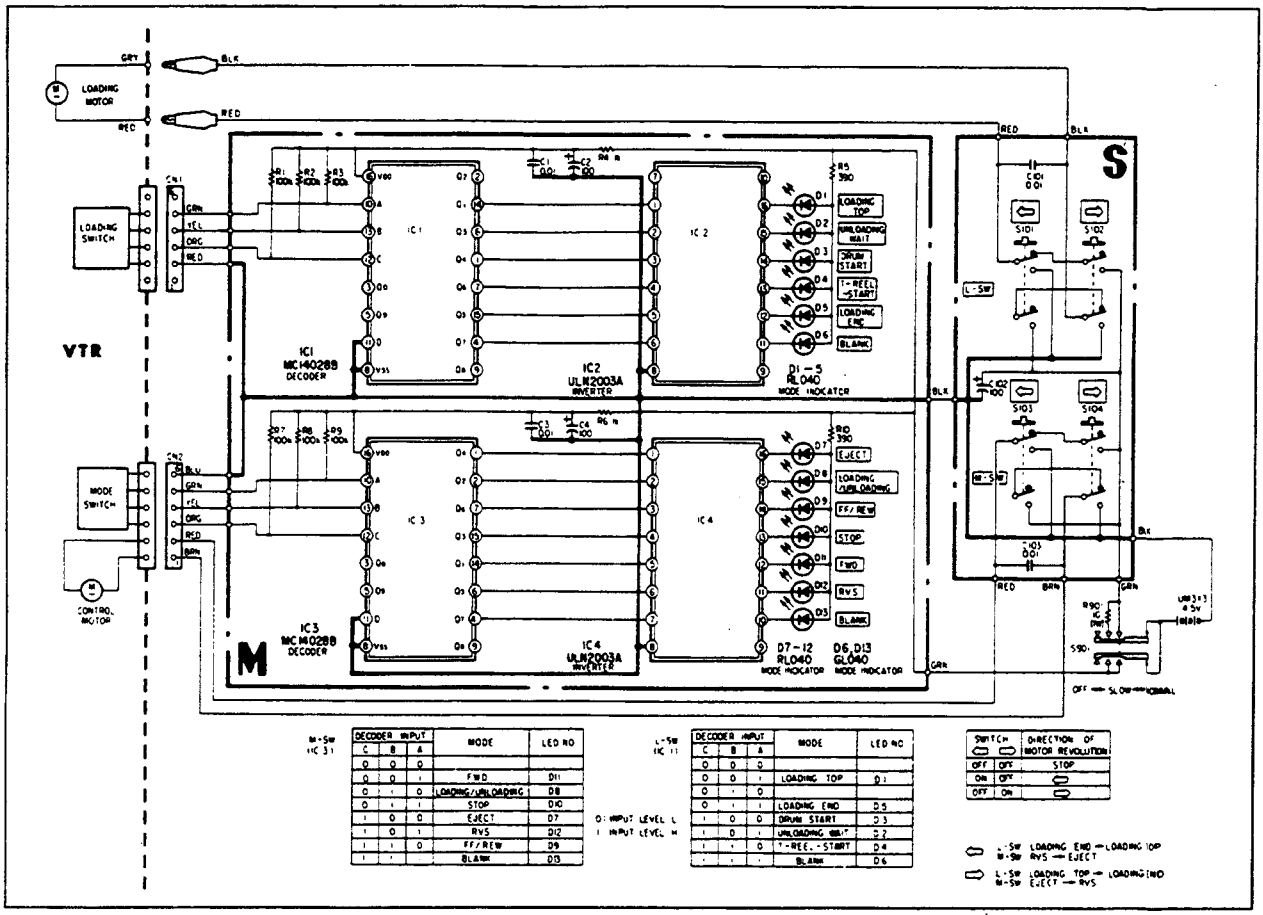


Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM



1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description
	CAPACITOR	
C1	1-108-579-00	MILER 0.01μF 50V
C2	1-123-333-00	ELECT 100μF 24V
C3	1-108-579-00	MILER 0.01μF 50V
C4	1-123-333-00	ELECT 100μF 24V
C101	1-108-579-00	MILER 0.01μF 50V
C102	1-123-333-00	ELECT 100μF 24V
C103	1-108-579-00	MILER 0.01μF 50V
	DIODE	
D1	8-719-812-31	DIODE TLR123
D2	8-719-812-31	DIODE TLR123
D3	8-719-812-31	DIODE TLR123
D4	8-719-812-31	DIODE TLR123
D5	8-719-812-31	DIODE TLR123
D6	8-719-812-33	DIODE TLG123A
D7	8-719-812-31	DIODE TLR123
D8	8-719-812-31	DIODE TLR123
D9	8-719-812-31	DIODE TLR123
D10	8-719-812-31	DIODE TLR123
D11	8-719-812-31	DIODE TLR123
D12	8-719-812-31	DIODE TLR123
D13	8-719-812-33	DIODE TLG123A

Ref. No	Part No.	Description		
	IC			
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
	RESISTOR			
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

· Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the [USE] mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

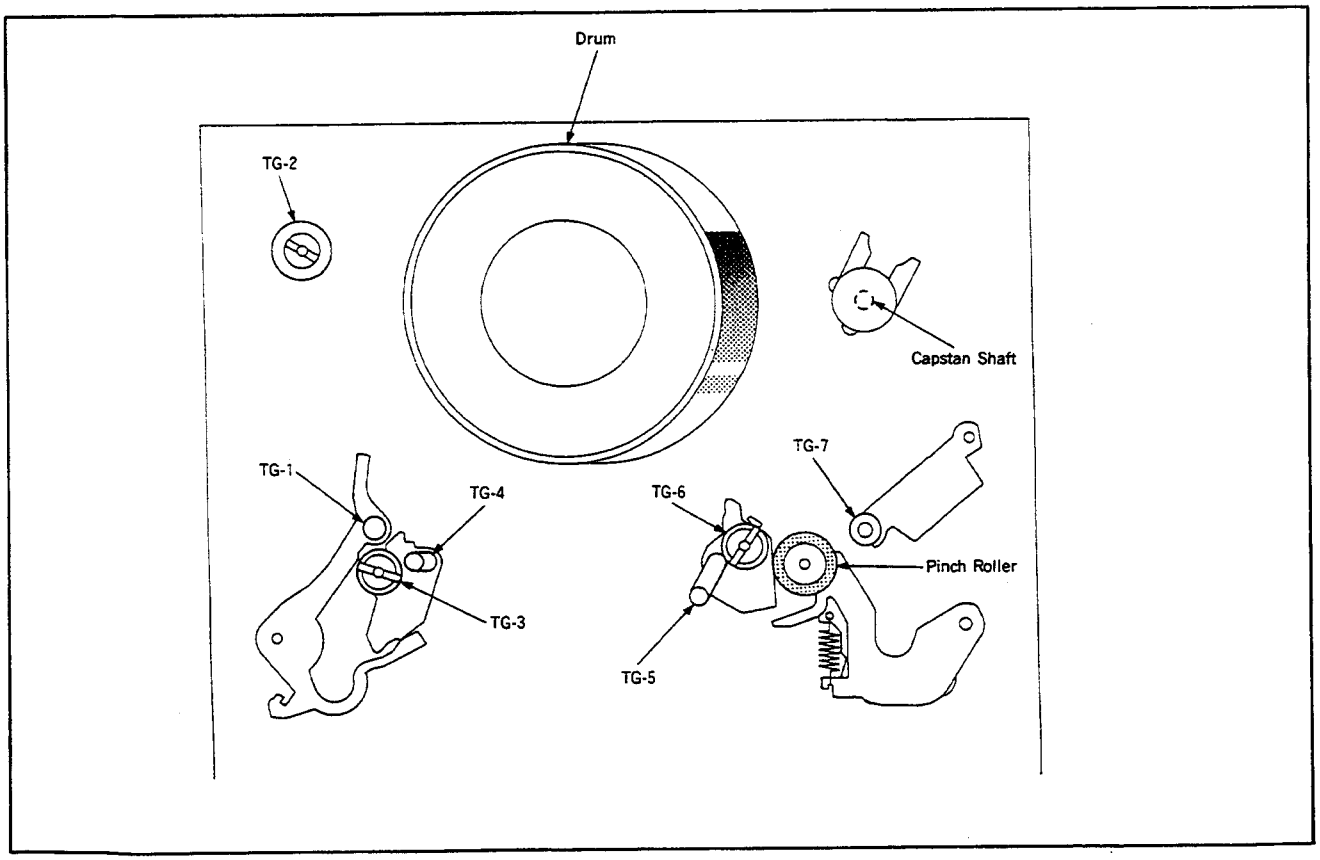


Fig. 7

2-3. PERILDIC CHECK ITEMS

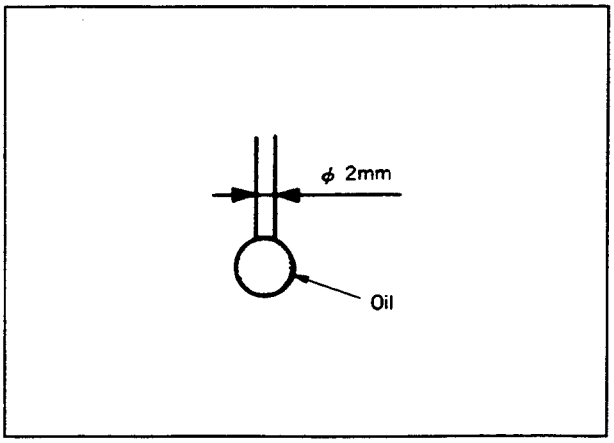
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape transportion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

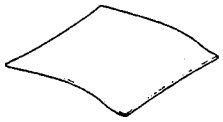
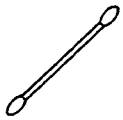
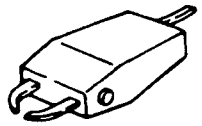
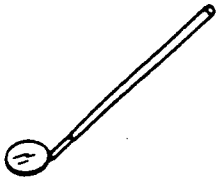
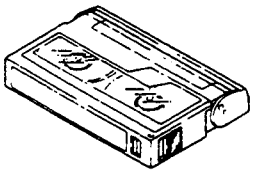
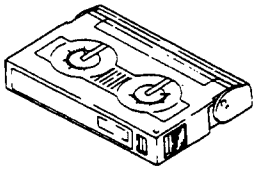
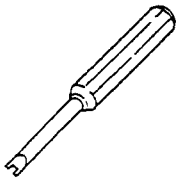
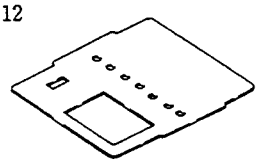
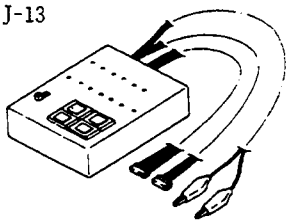
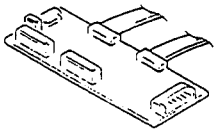
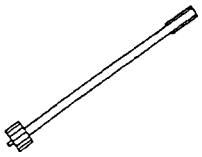
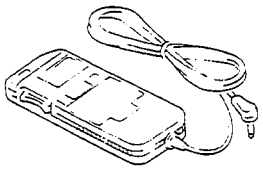
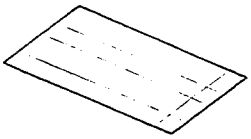
- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment ● Oscilloscope
● Analog tester (20 kΩ)

J-1	J-2 	J-3 	J-4 
J-5 	J-6 	J-9 	J-10 (Attached to the maintenance rotary upper drum)
J-11 	J-12 	J-13 	J-14 
J-15 	J-16 	J-17 	

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in [ ] are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw 1.
3) Remove the Retainer, Gooseneck assembly 2.

2. Mounting

1) Mount the Retainer, Gooseneck assembly 2 with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw 1.
3) Referring to 1-1, mount the cassette compartment assembly.

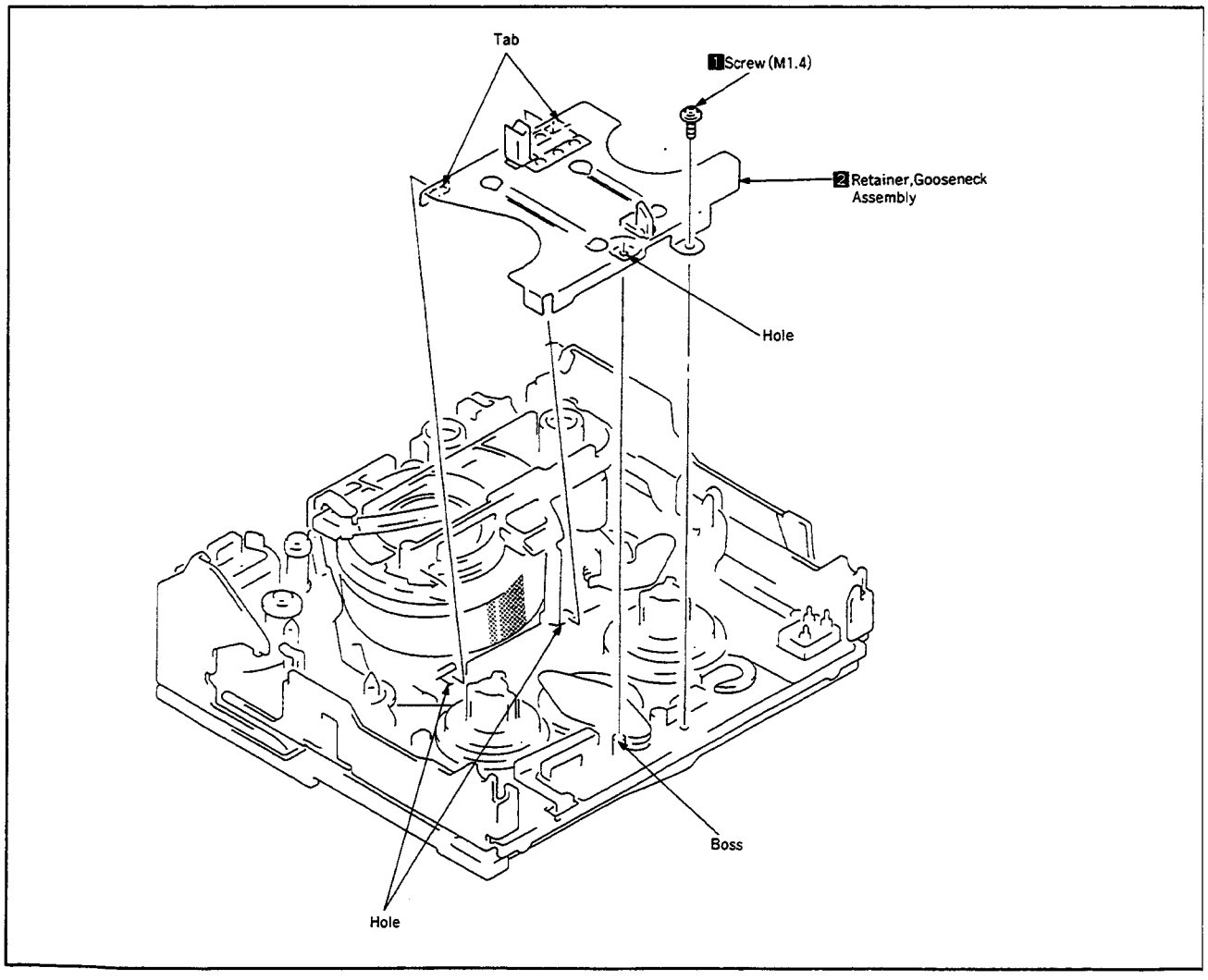


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws 1, then the protector base assembly 2.

2. Mounting

1) Mount the protector base assembly 2 with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder 3.
2) Tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

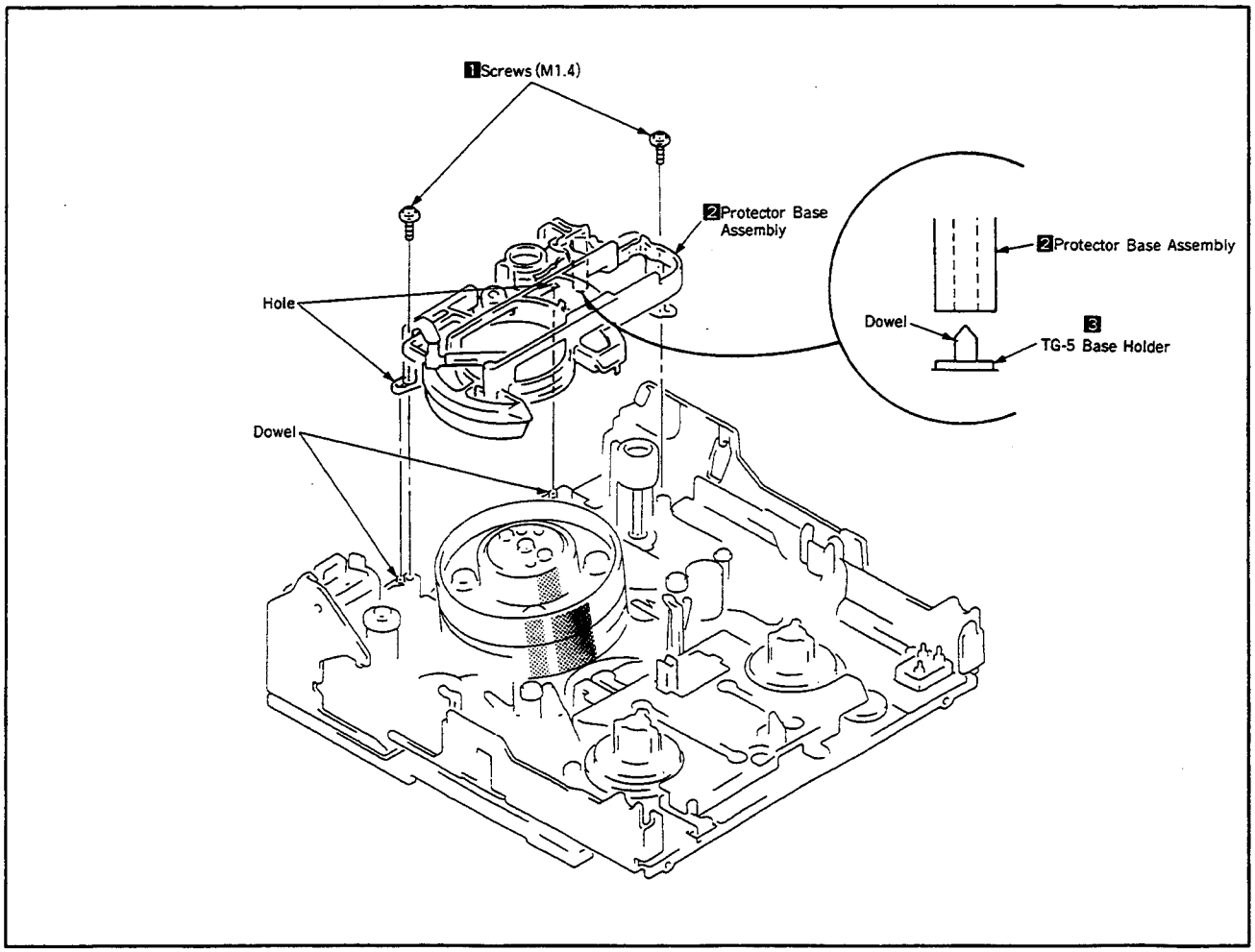


Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board 1 on the back of MD.
4) Remove three screw 2, then the drum assembly 3.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly 3 while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies 2 in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board 1 on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

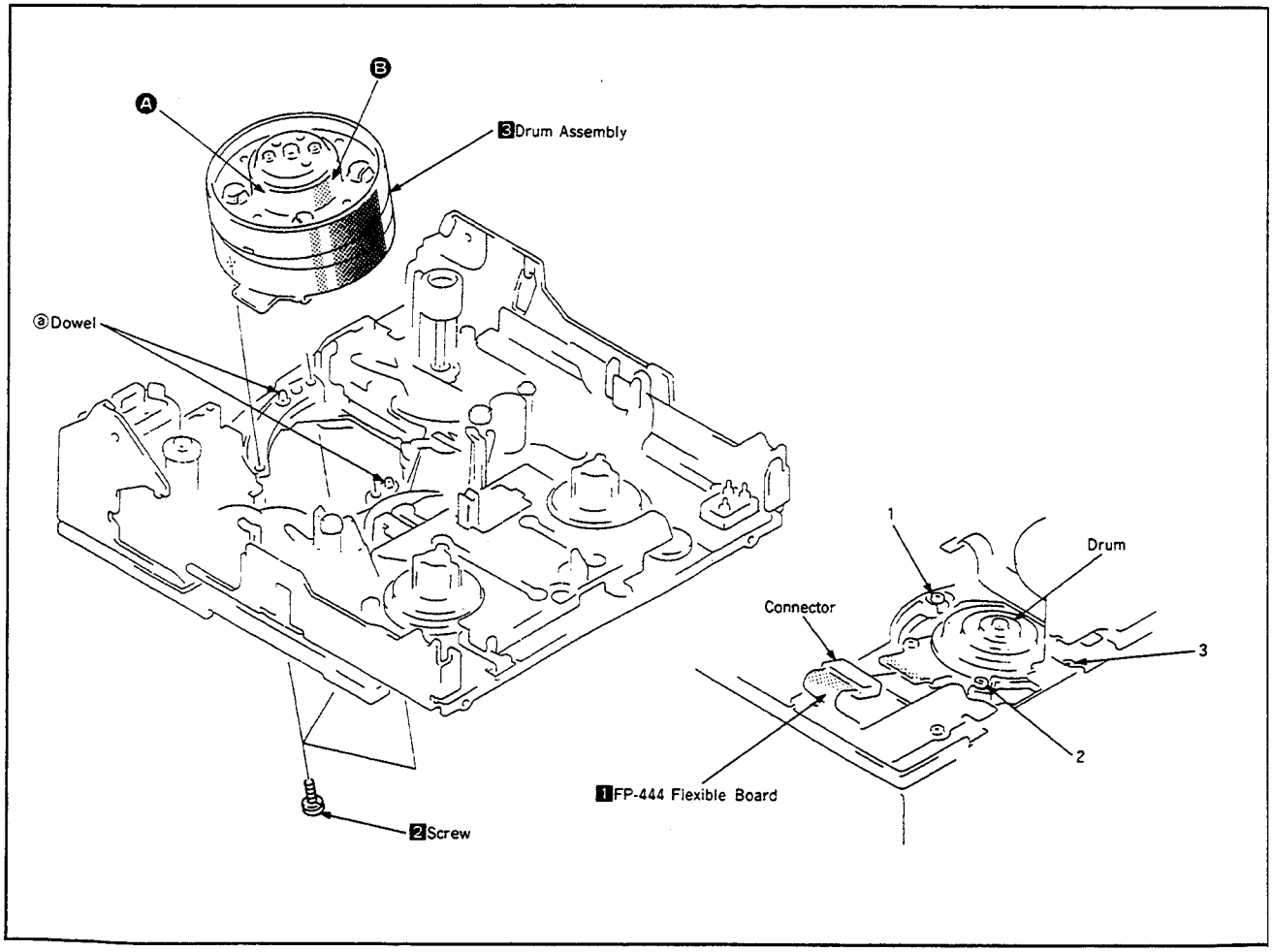


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

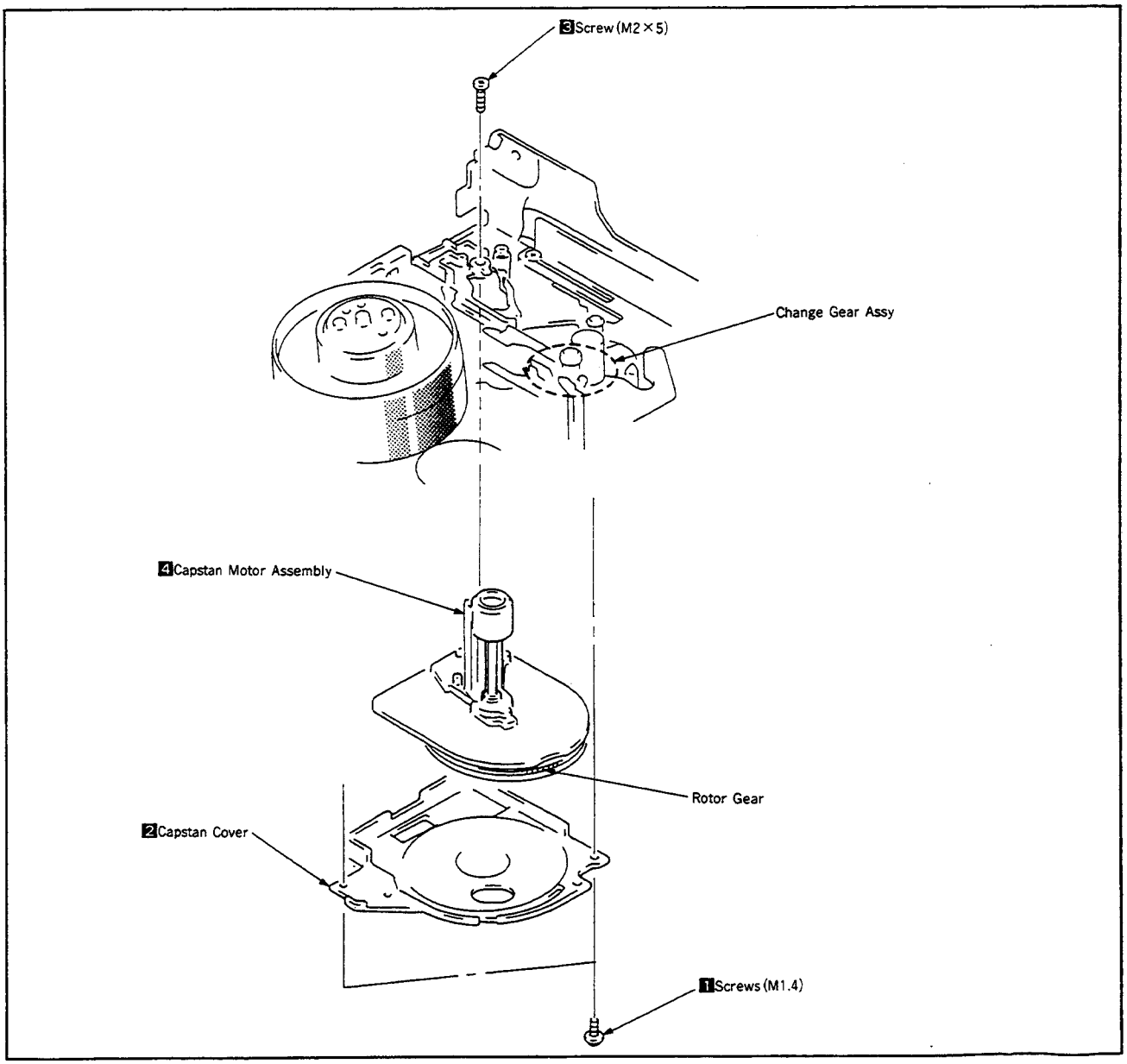


Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly 1.
4) Remove the T soft assembly 2, then the T soft arm 3.

2. Mounting

1) Mount the T soft arm 3 with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly 2 with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly 1 and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

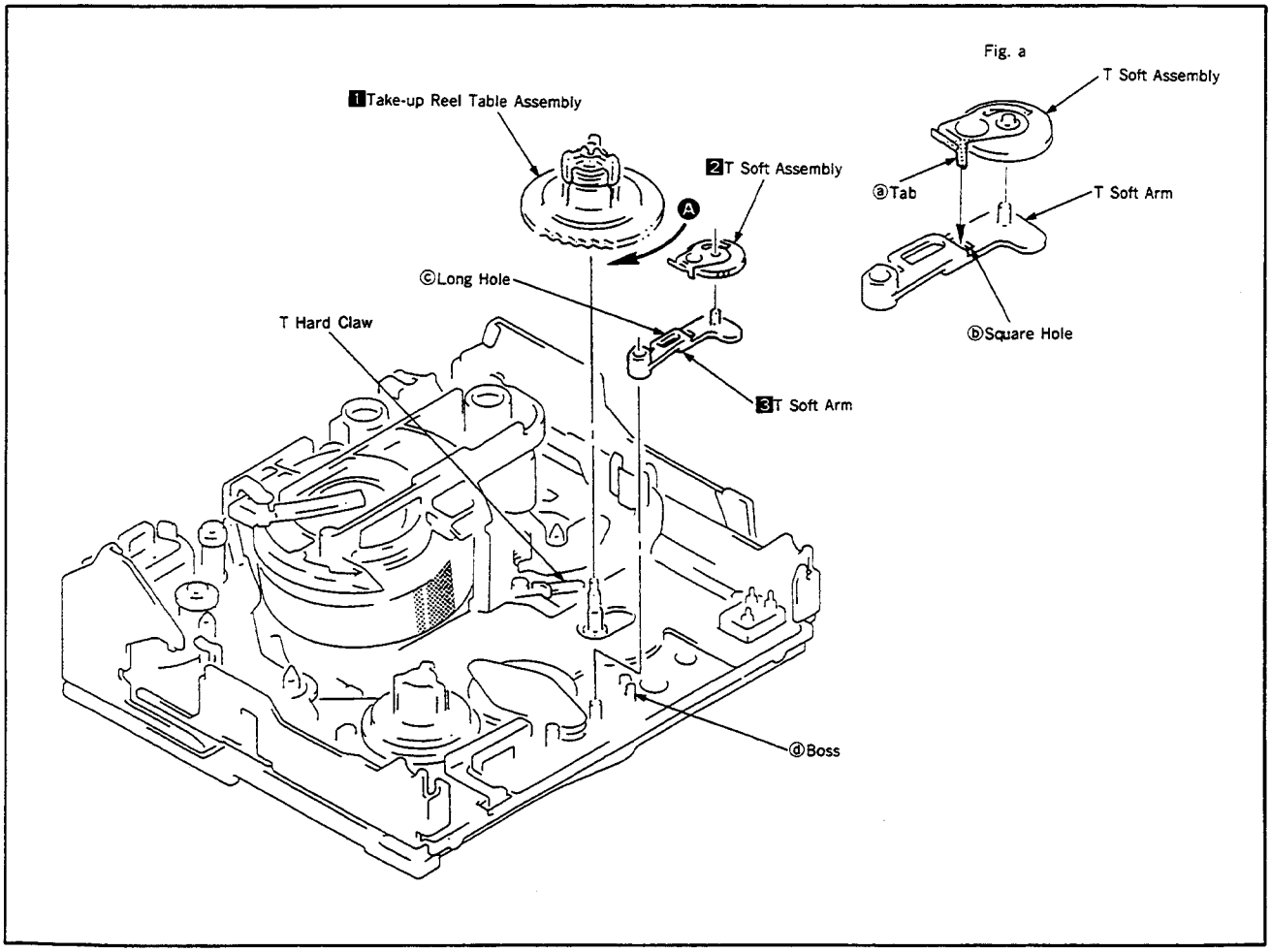


Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer 1, then the pinch arm assembly 2.

2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly 2 to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer 1.
5) Referring to 1-1, mount the cassette compartment assembly.

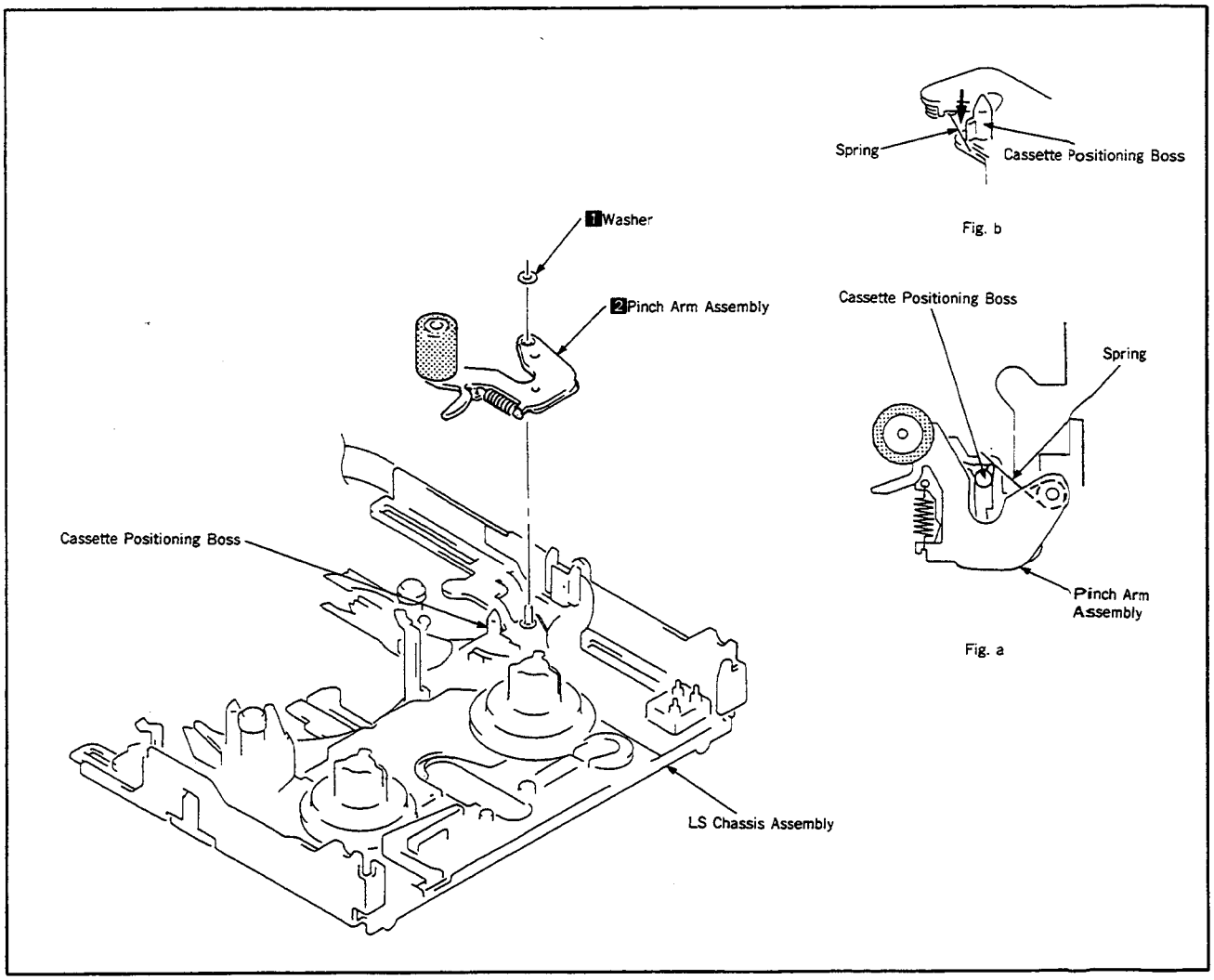


Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

2. Mounting

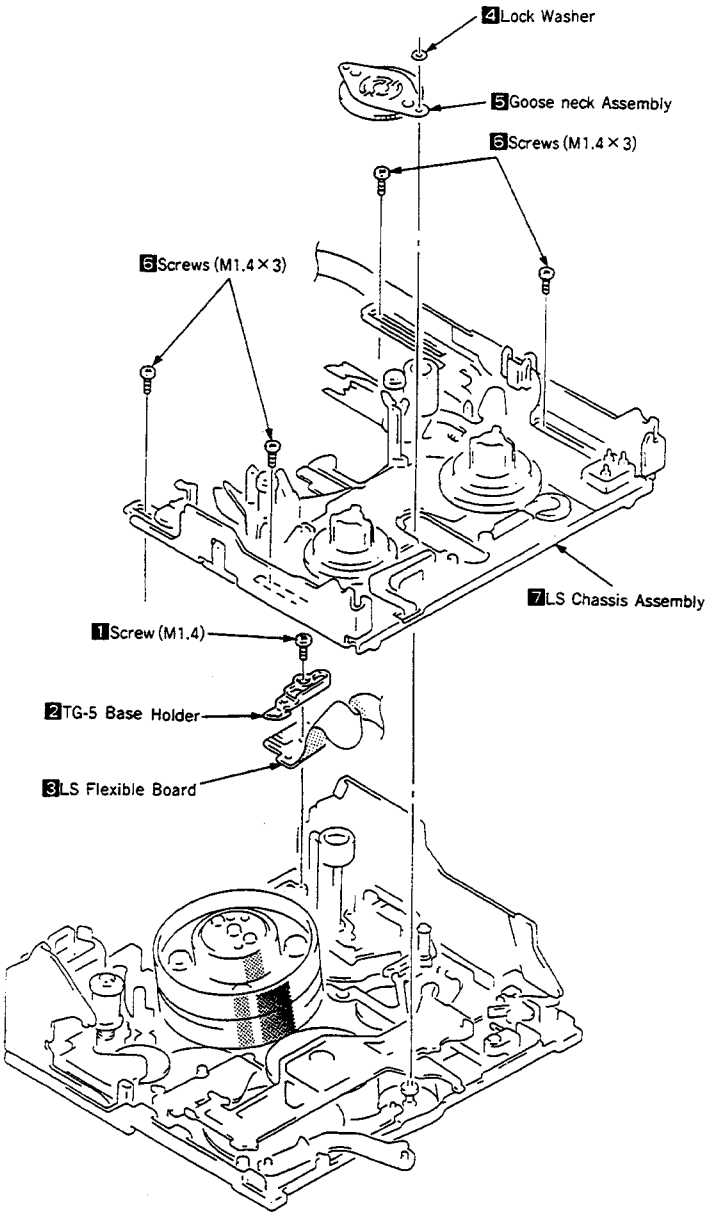
1) Select the [USE] mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.


4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4 × 3)
6 Screws (M1.4 × 3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board

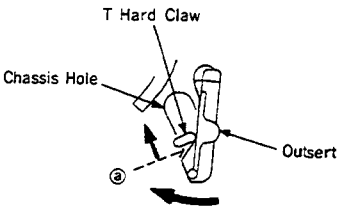


Fig. a

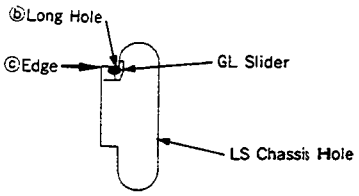


Fig. b

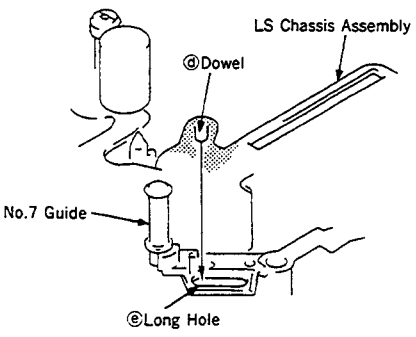


Fig. c

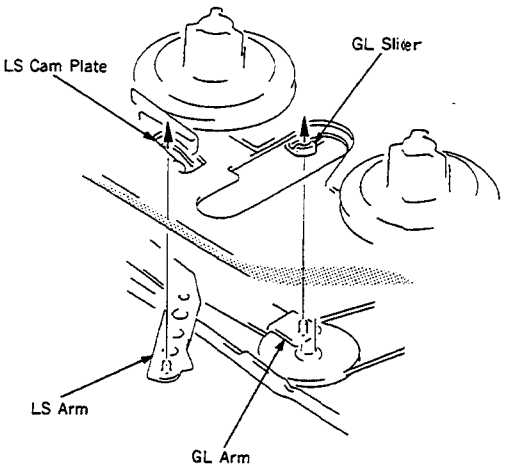


Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

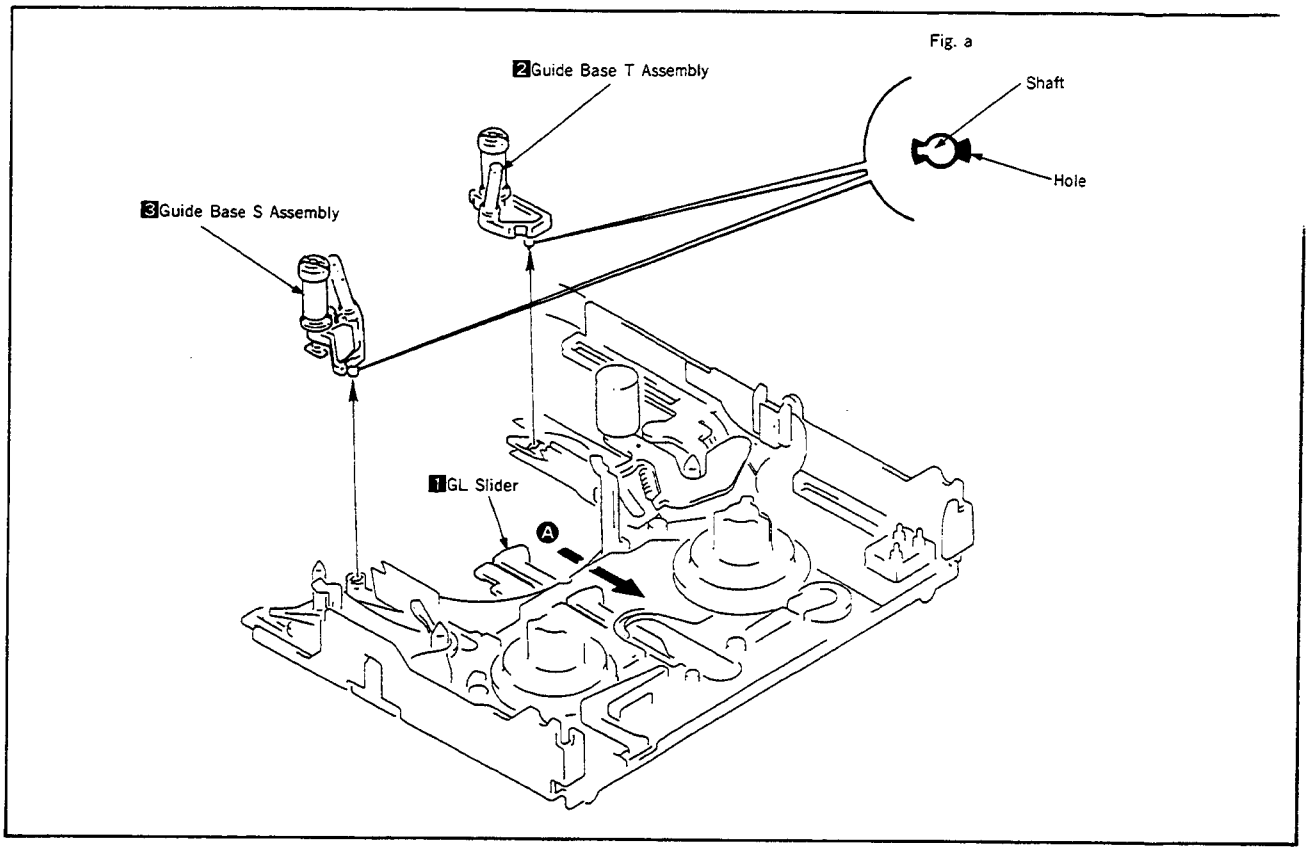


Fig. a
2Guide Base T Assembly
Shaft
Hole
3Guide Base S Assembly
1GL Slider
A

Fig. 15

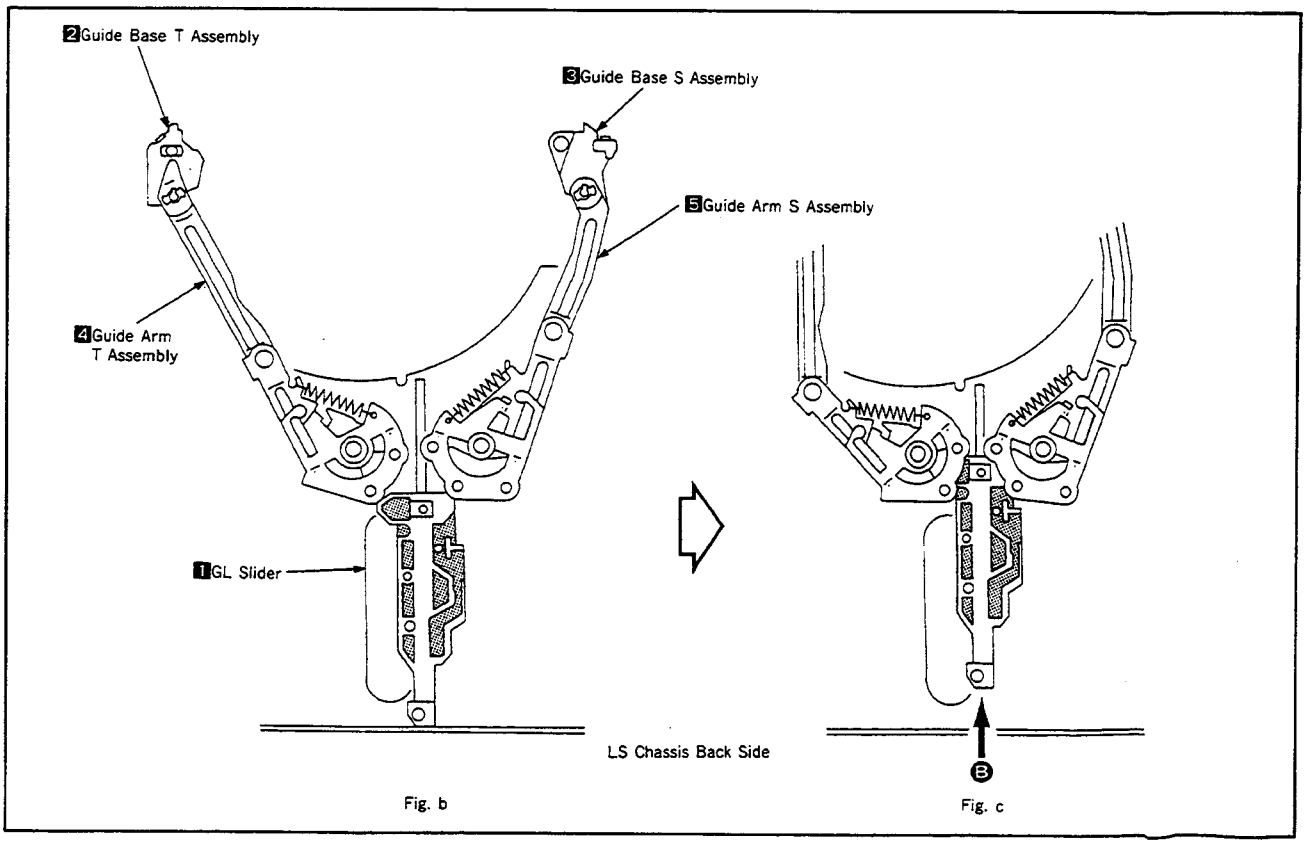

2Guide Base T Assembly
3Guide Base S Assembly
5Guide Arm S Assembly
4Guide Arm
T Assembly
1GL Slider
LS Chassis Back Side
B
Fig. b
Fig. c

Fig. 16

3. GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers 1, then the guide arm T assembly 2 and guide arm S assembly 3 respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly 2 and guide arm S assembly 3, then fix them with a lock washer 1 respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

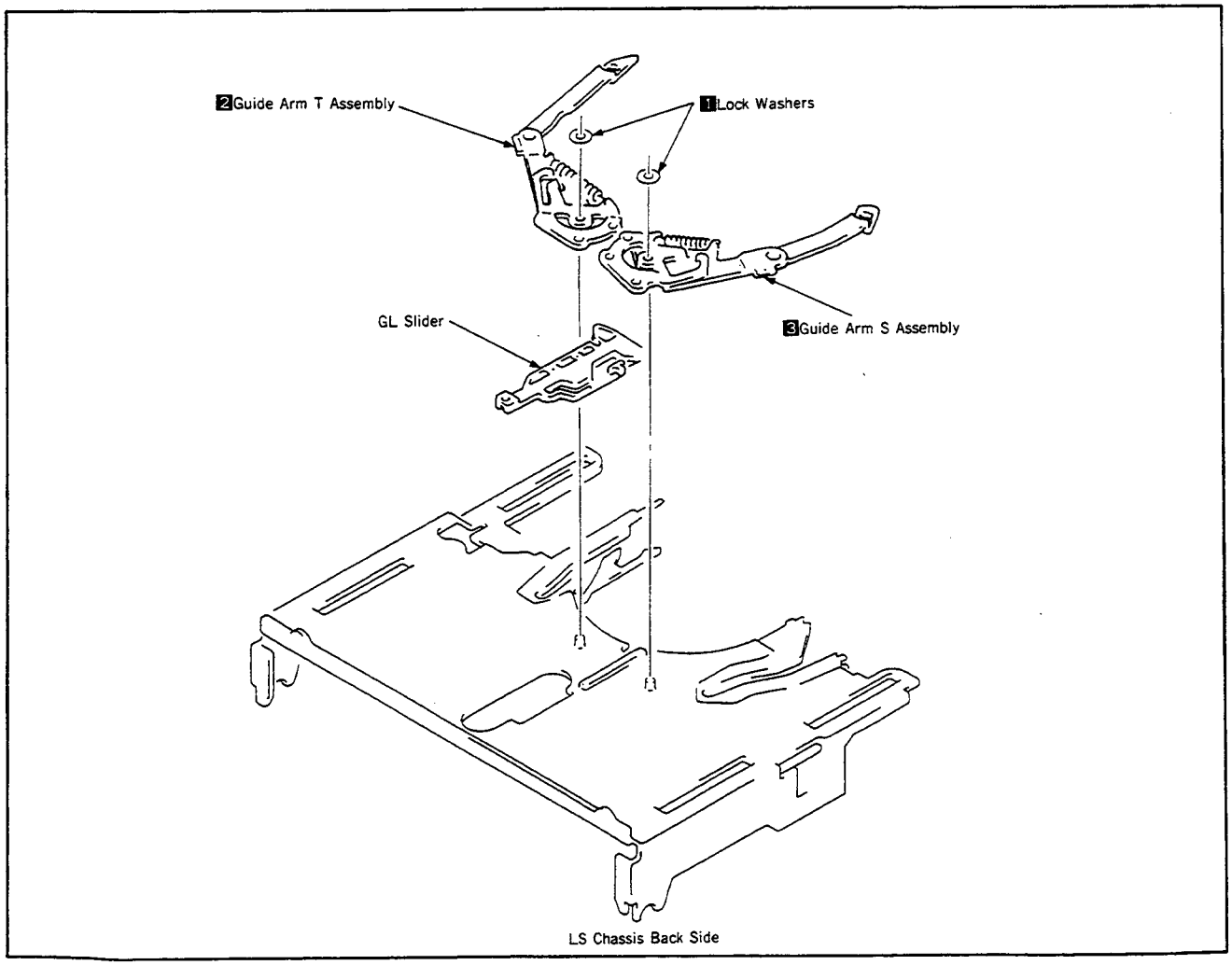


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw 1, then the string 2 from the supply reel table assembly 3. For easy removal of string block 4, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly 3.
8) Remove a tension coil spring 5.
9) Turn the TG-1 arm assembly 6 up to a portion © of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake 7 toward the arrow Ⓑ, mount thesupply reel table assembly 3.
2) Route the string 2 under the TG-1 arm asembly 6, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ©, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string 2 along the groove of supply reel t assembly 3 (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion : oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block 4 toward the arrow Ⓒ and tighten the screw 1 (Fig. a).
5) Engage the tension coil spring 5 to the chassis hook.

Note : Confirm that the string 2 is surely wound around the groove of supply reel table assembly 3 (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

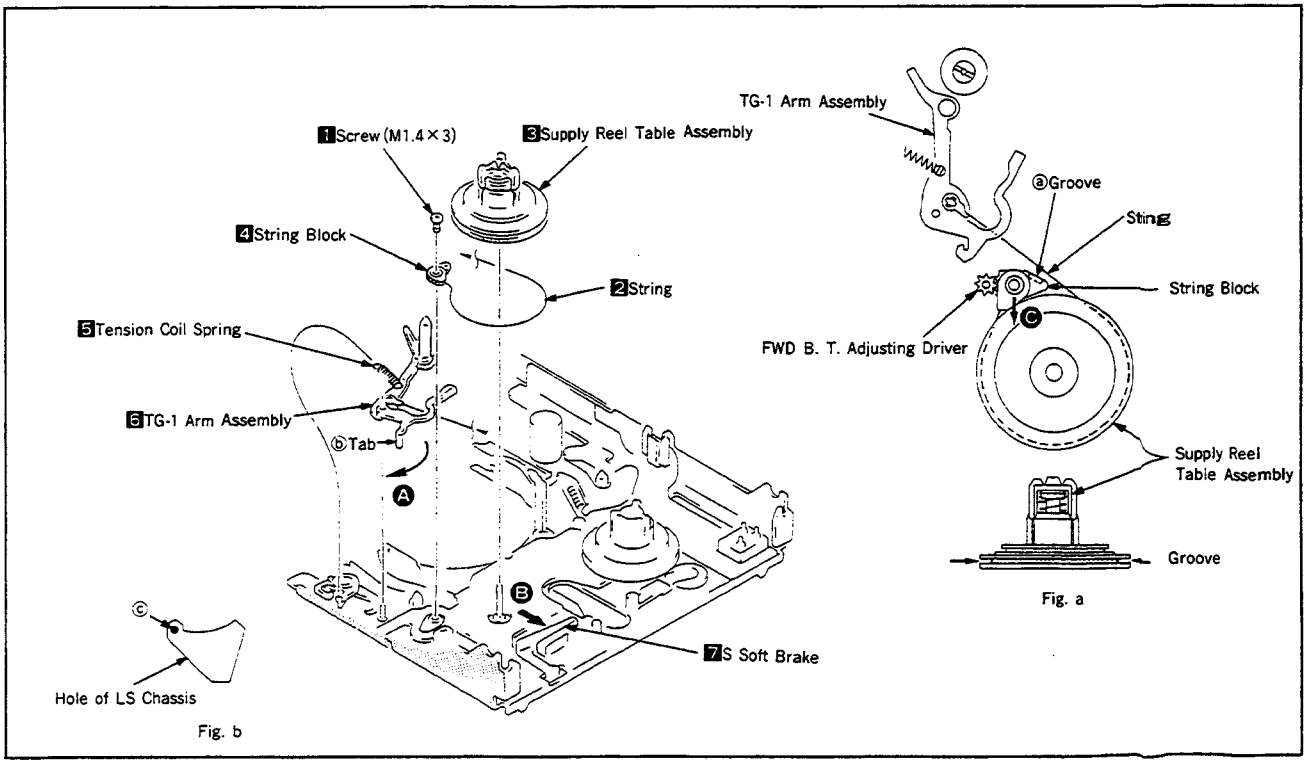


Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly 1 .
2) Remove a compression coil spring 2 .

2.Mounting

1) Insert a compression coil spring 2 into the boss on chassis.
2) Rotate gently the TG-2 roller assembly 1 until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

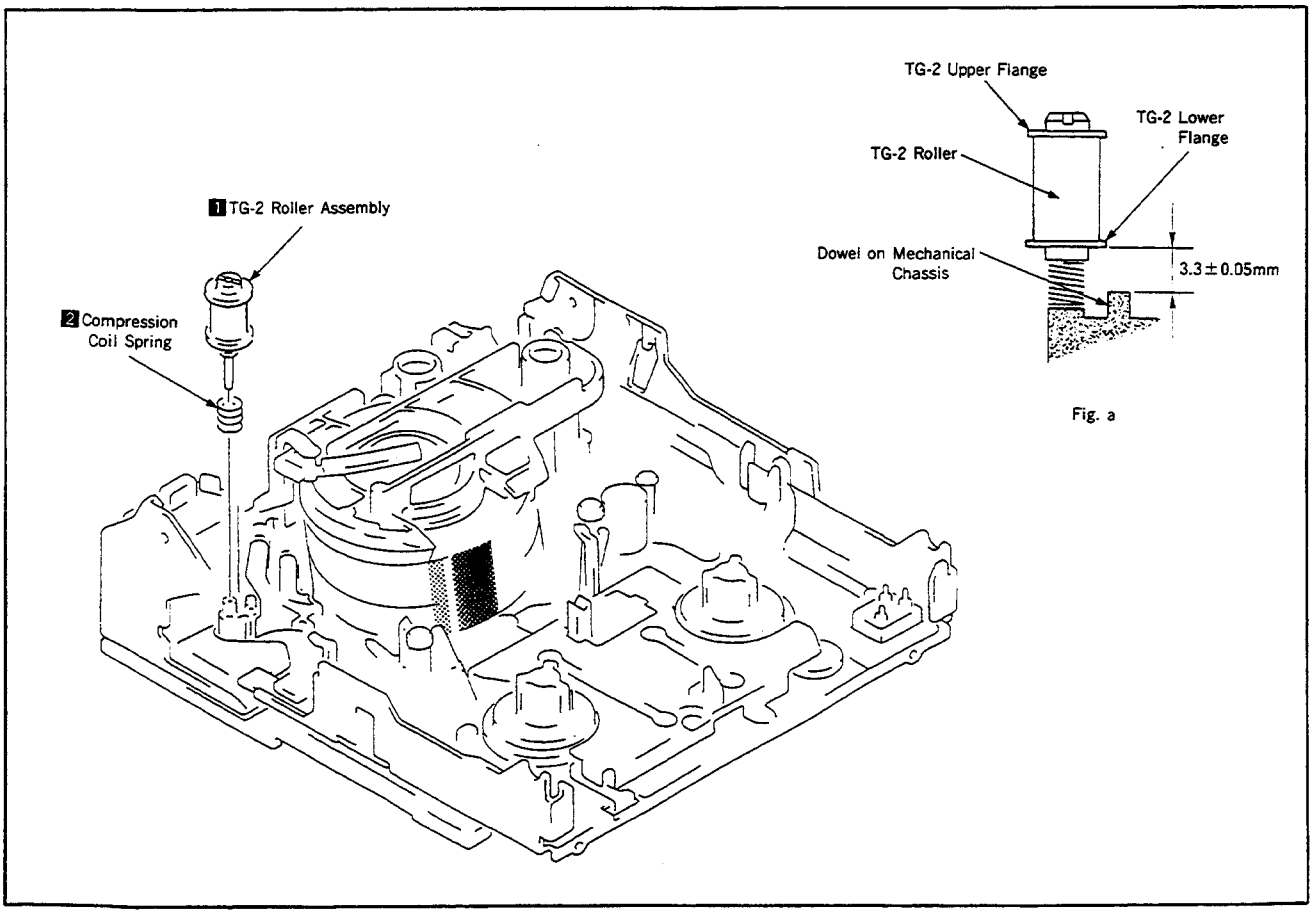


Fig. a

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring 1 in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly 2 from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly 2 to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring 1 to the mechanicalcha sis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

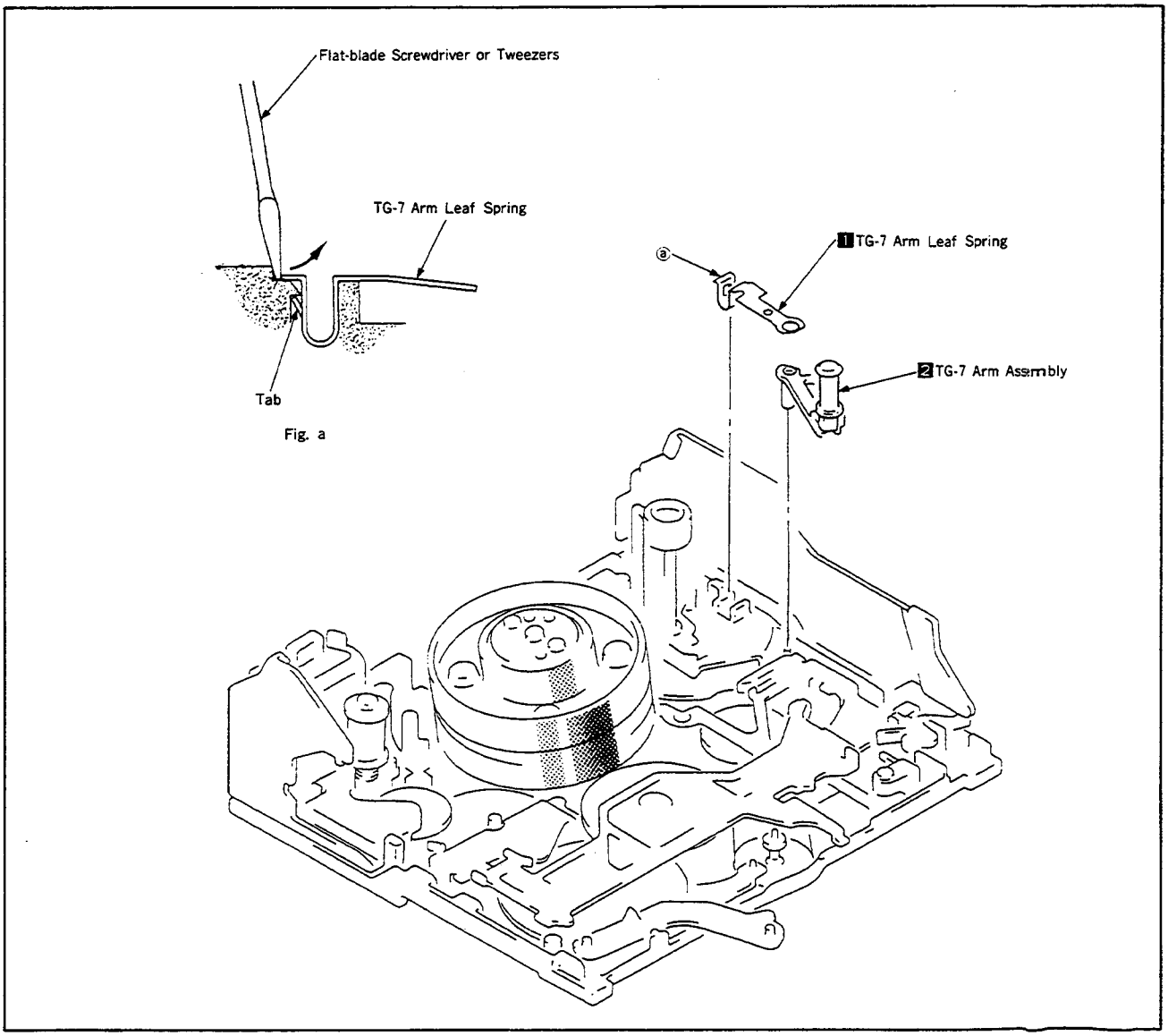


Fig. 20

3. LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the [LOAD] mode (at the position where the FF arm assembly is not above the screw 1).
6) Remove two screws 1, then the LM motor assembly 2.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly 2 with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws 1.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

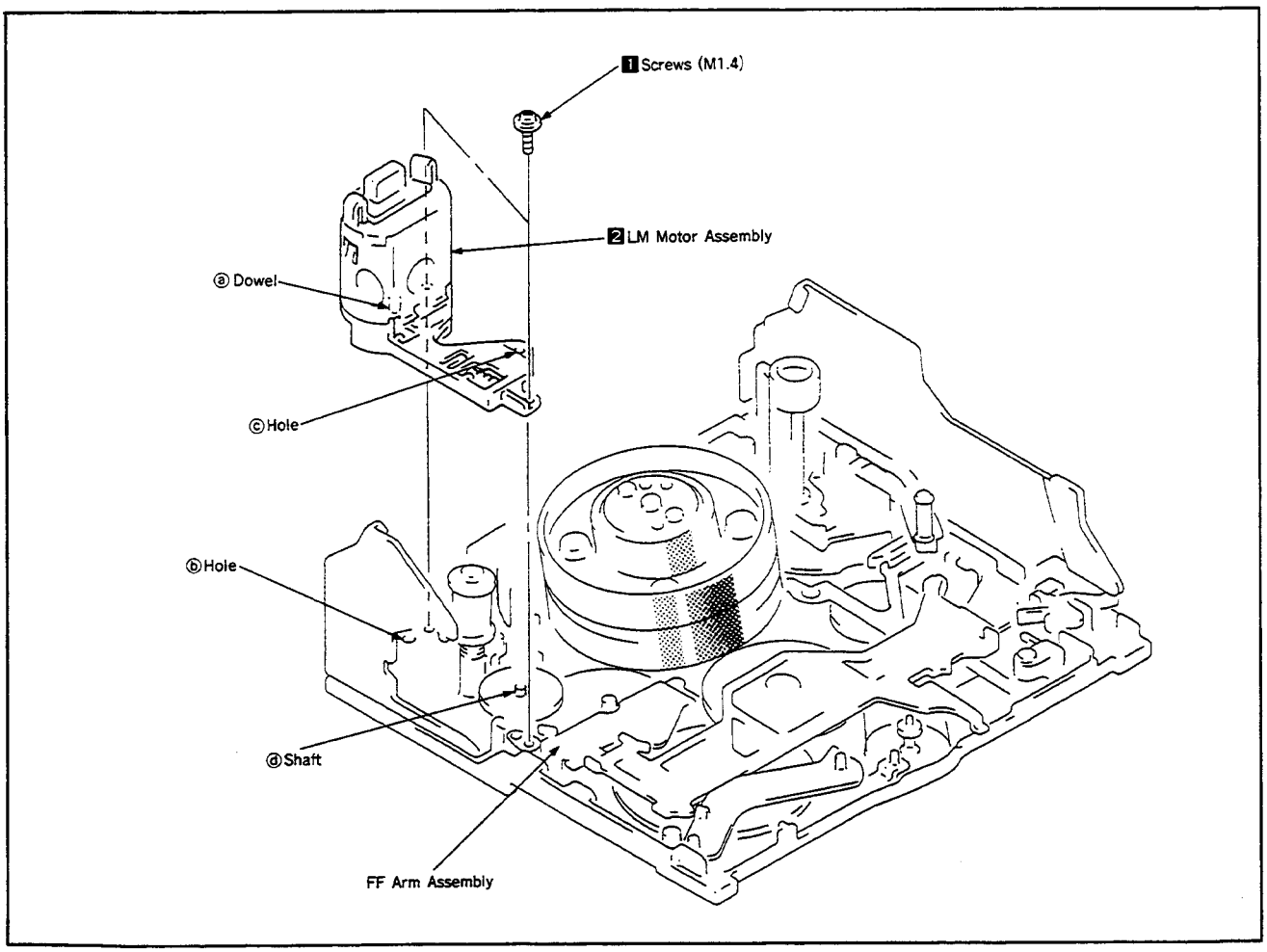


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm 1 from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller 2.

2. Mounting

1) Mount the LS arm 1 meeting with mechanical chassis sh. and cam groove.

Note : Move the LS arm 1 in arrow direction to confirm that the LS roller 2 is surely inserted.
2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

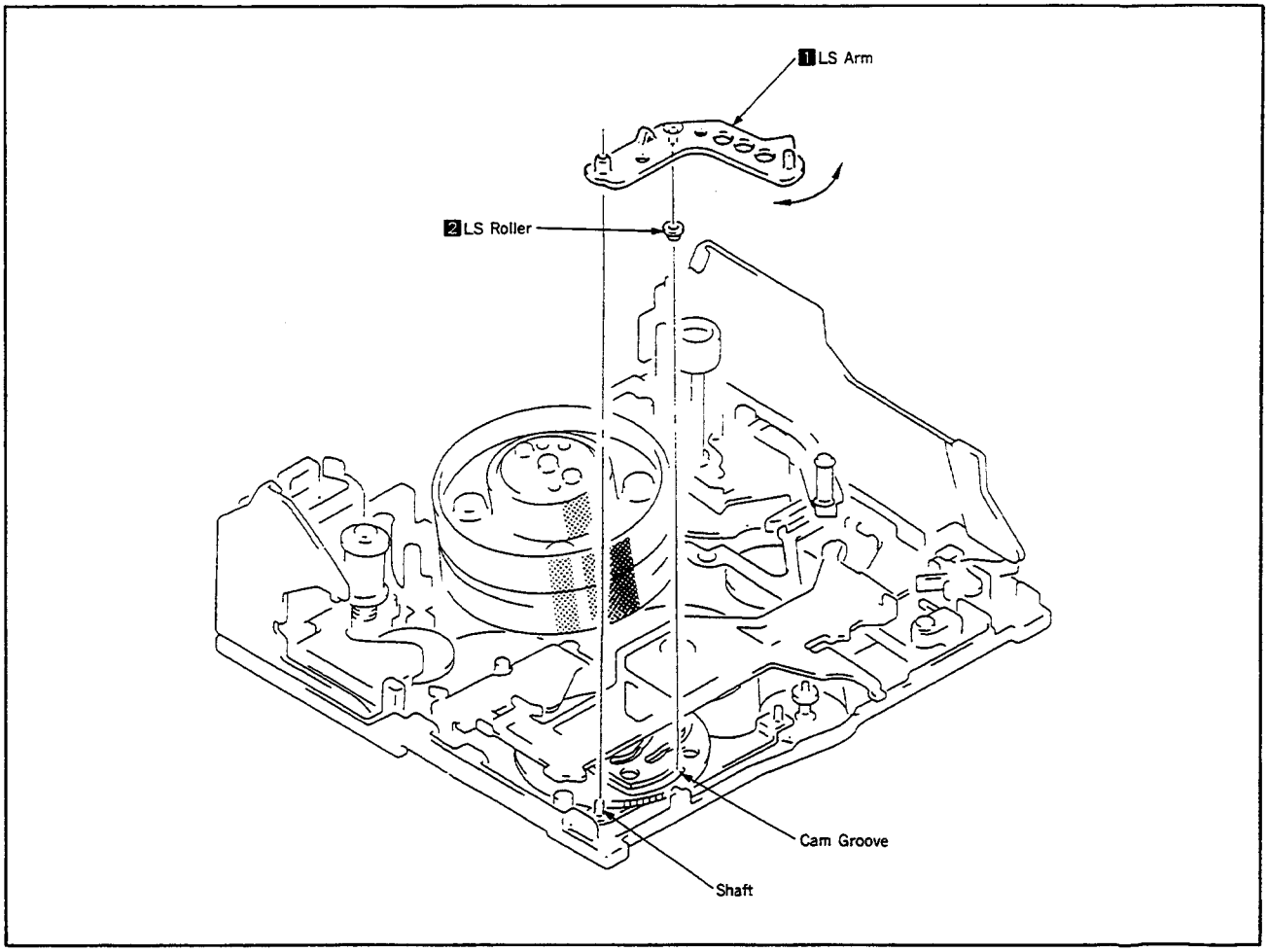


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

ɔemoval

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws 1, then the gear holder 2.
6) Remove two lock washers 3, then the M slider assembly 4.

2. Mounting

1) Mount the M slider assembly 4, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers 3.
3) Mount the gear holder 2 with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws 1.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

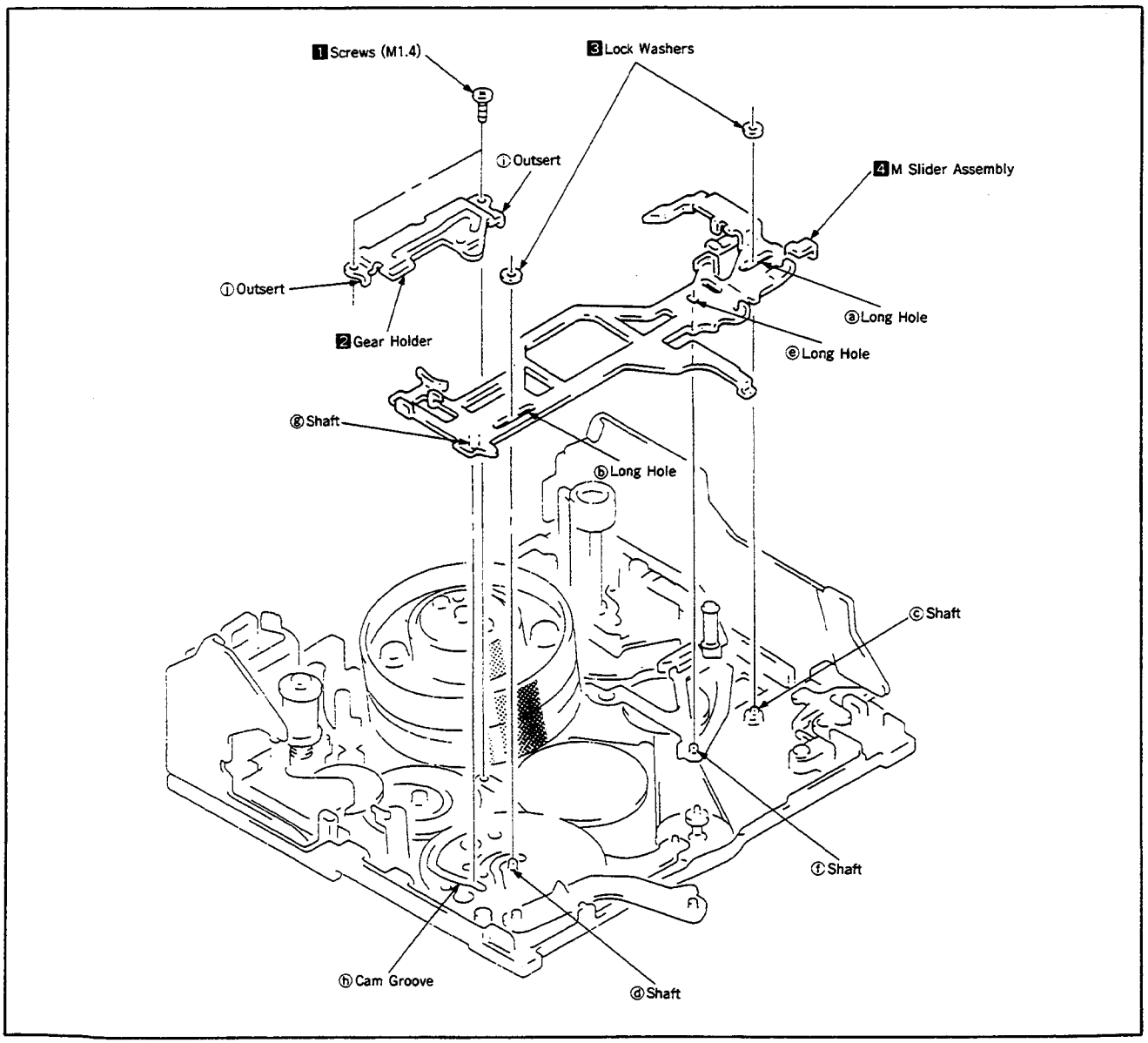


Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer 1, then pinch press arm assembly 2.

2.Mounting

1) Mount the pinch press arm assembly 2, inserting its sh: ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer 1.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

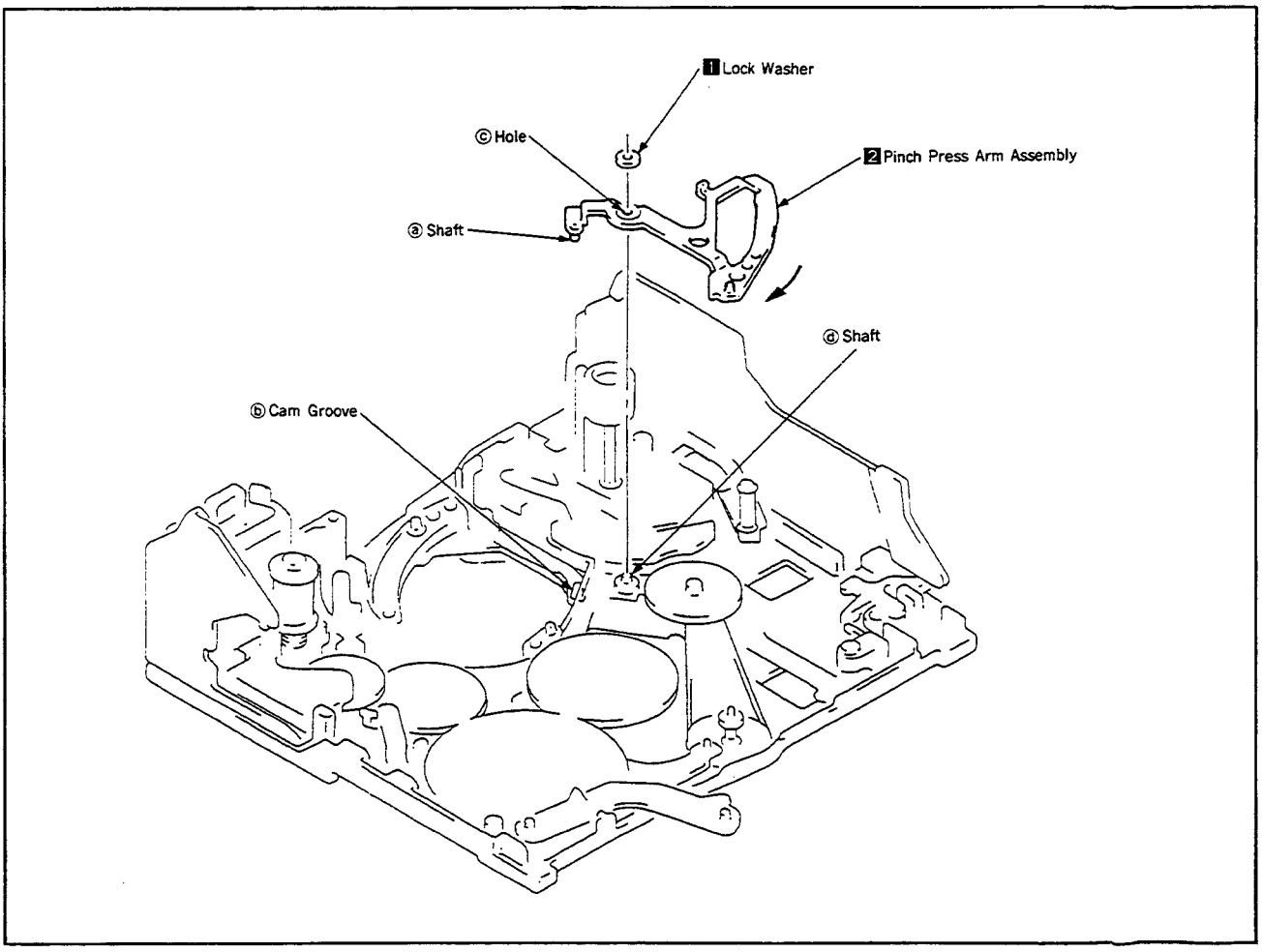


Fig. 24

7. CAM (Fig. 25)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam 1.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam 1, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

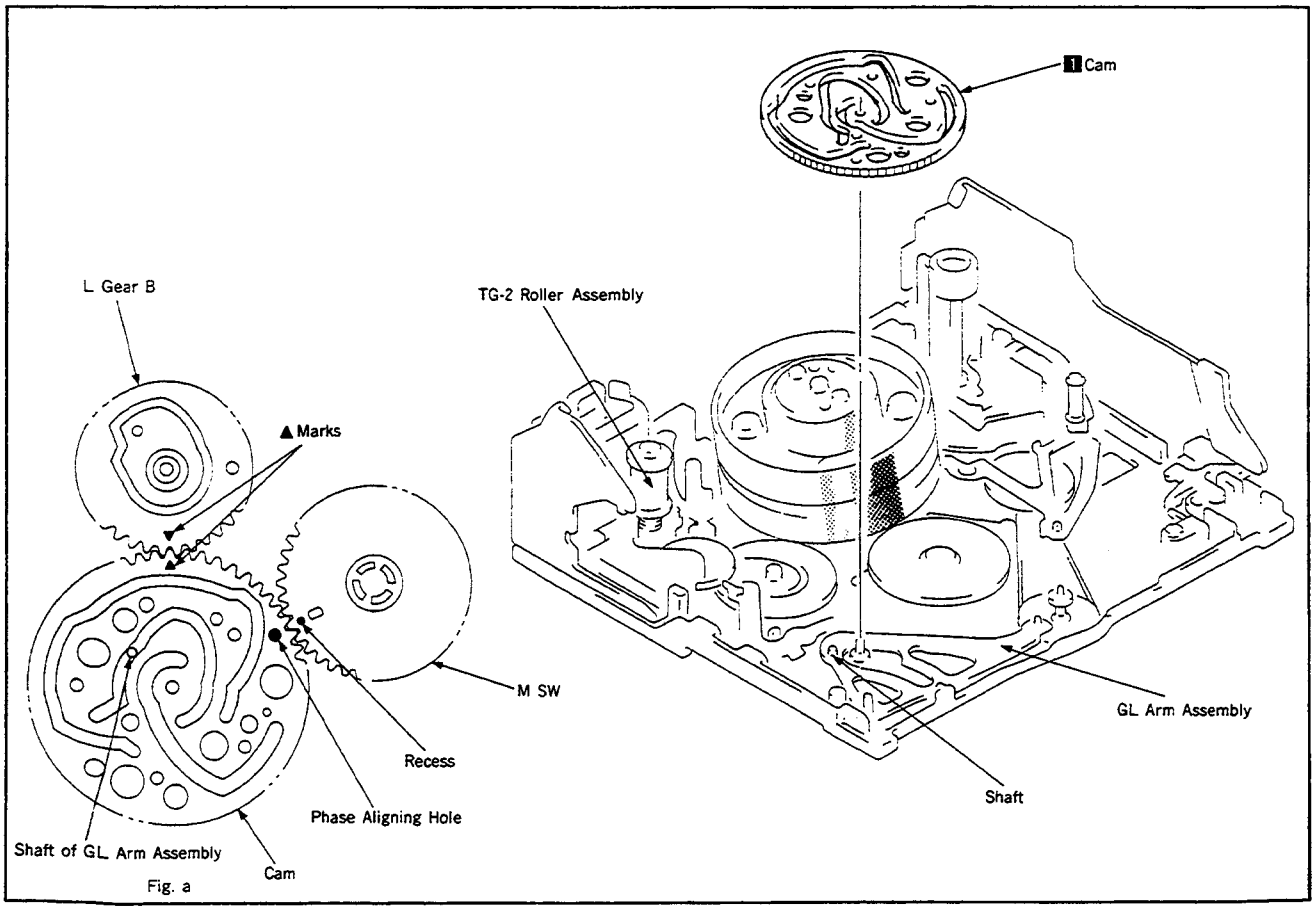


Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly **1**.

2. Mounting

1) Mount the GL arm assembly **1** with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

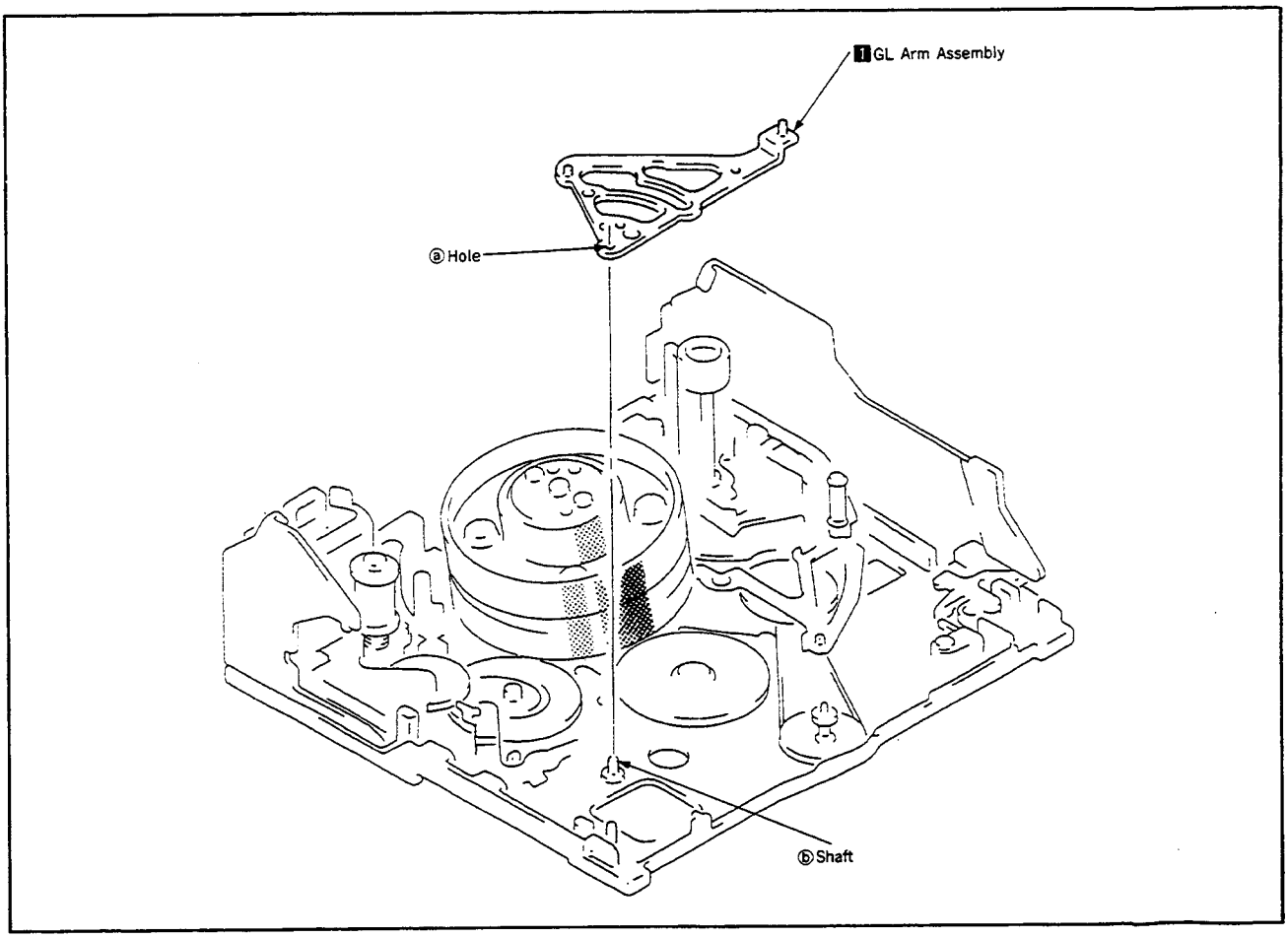


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly 1.
10) Remove the L gear A 2.
11) Remove the L gear B 3.

2. Mounting

1) Insert the L gear B 3 into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A 2 into the shaft of mechanical chassis.
3) Mount the FF arm assembly 1 with its two shafts inserted into the cam groove of L gear B 3 and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

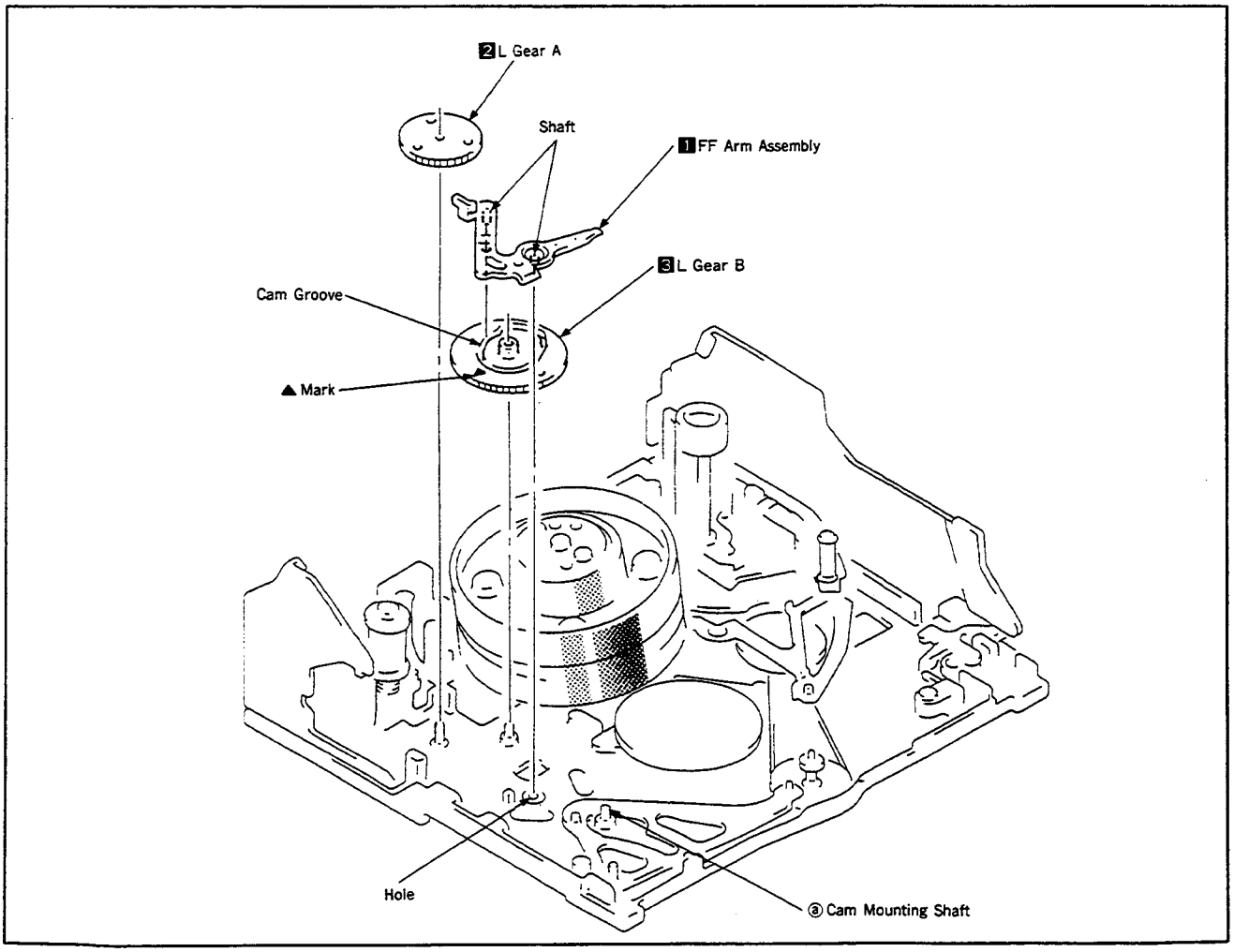


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.
* At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

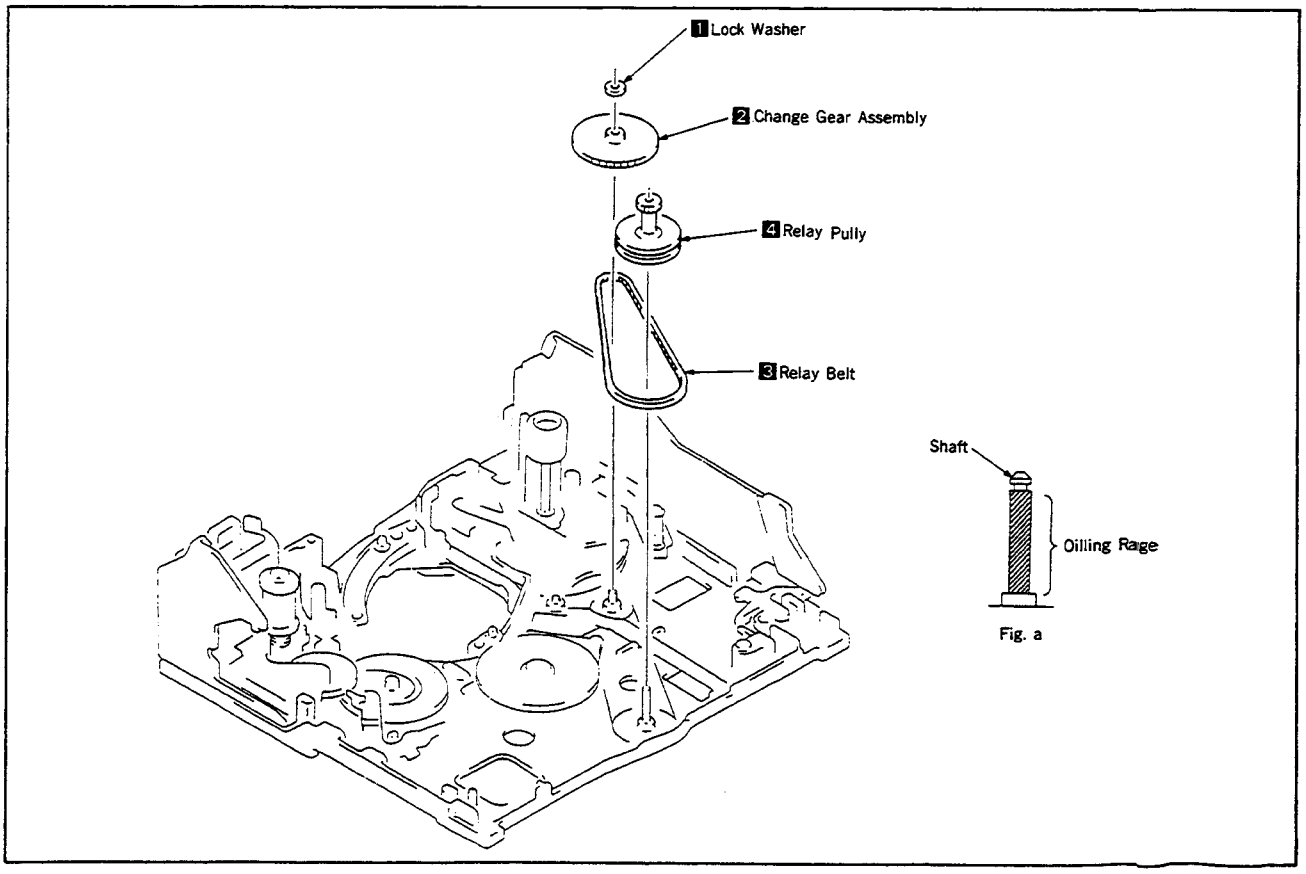


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

· If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

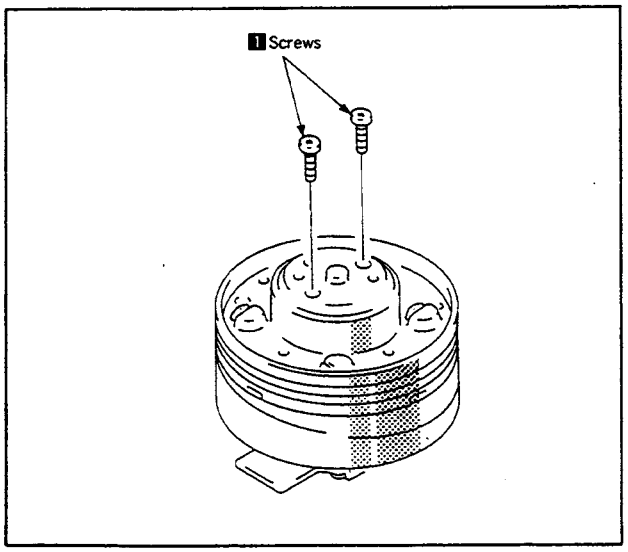


Fig. 29

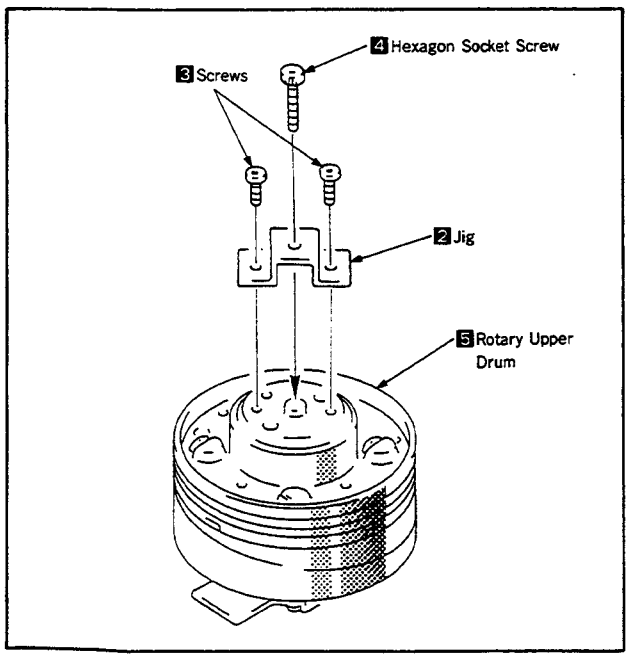


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

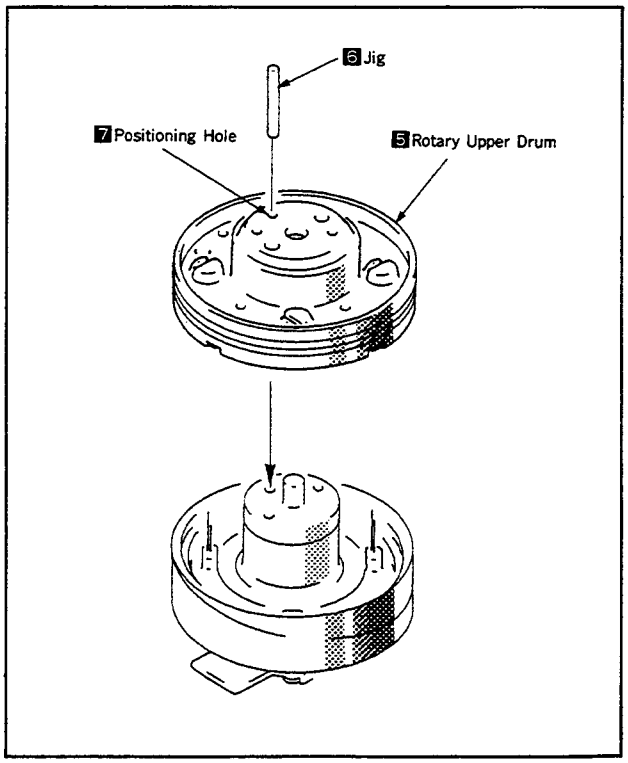


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw 1.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow A using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow B.
6) Tighten the screw 1.

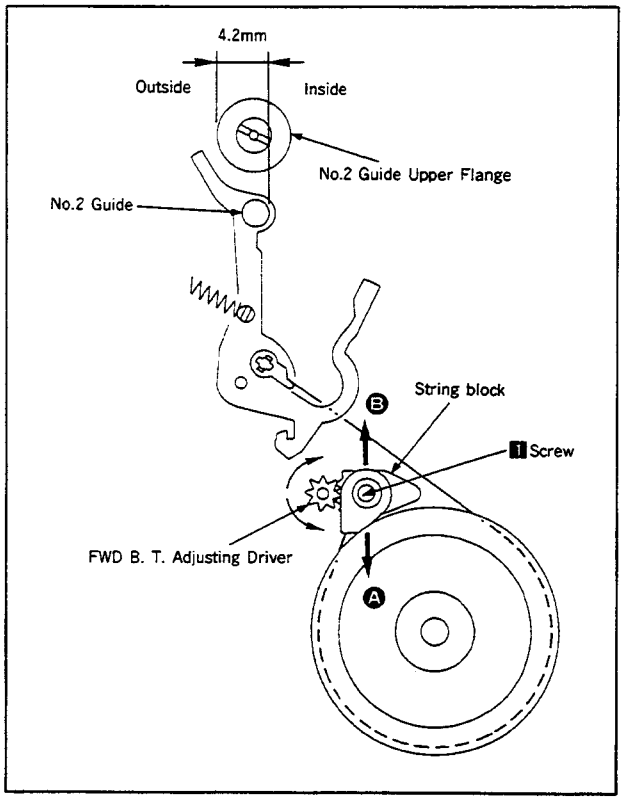


Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

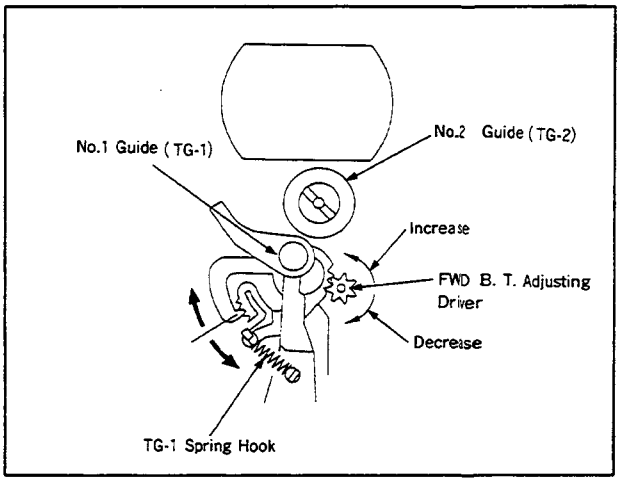


Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

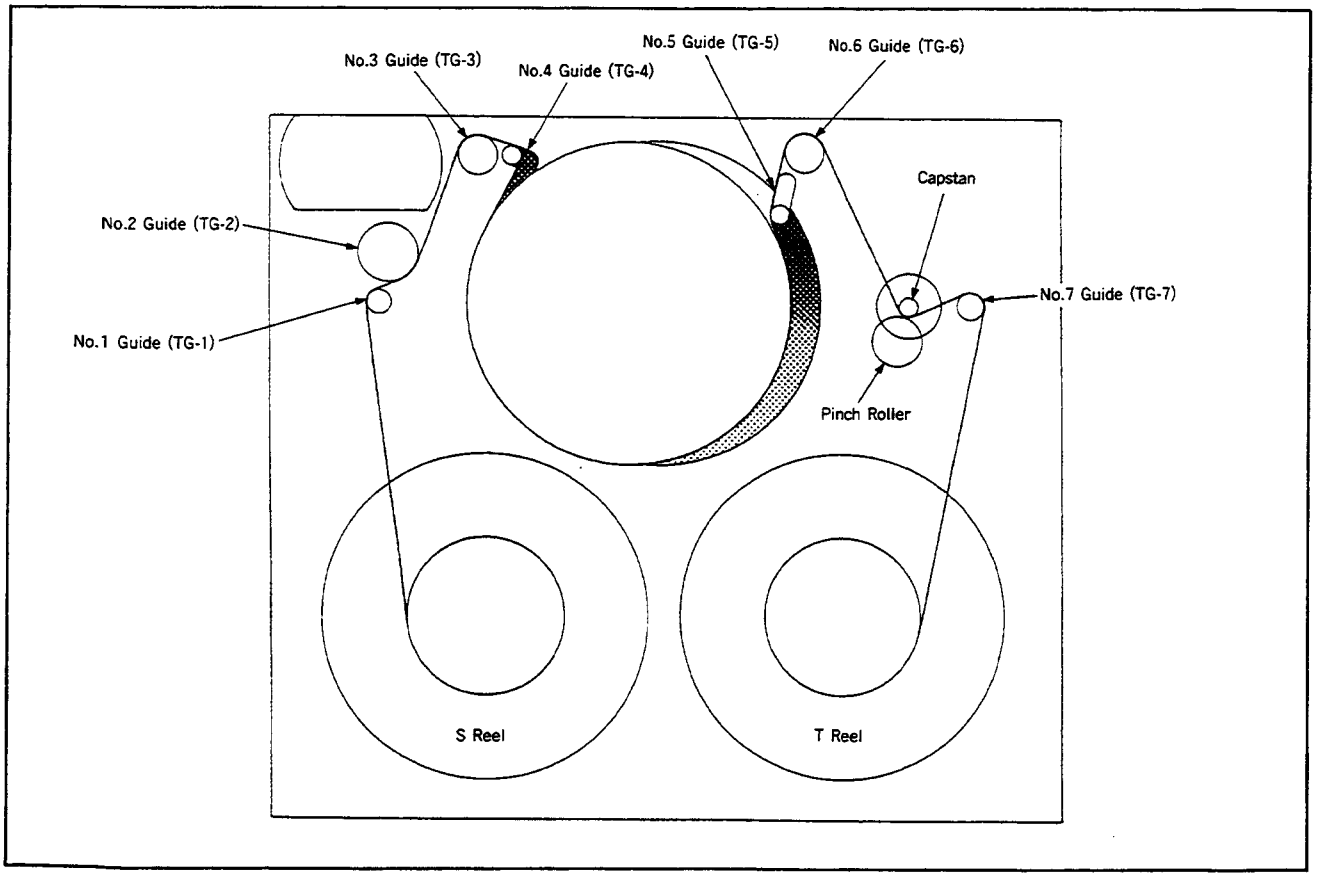


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

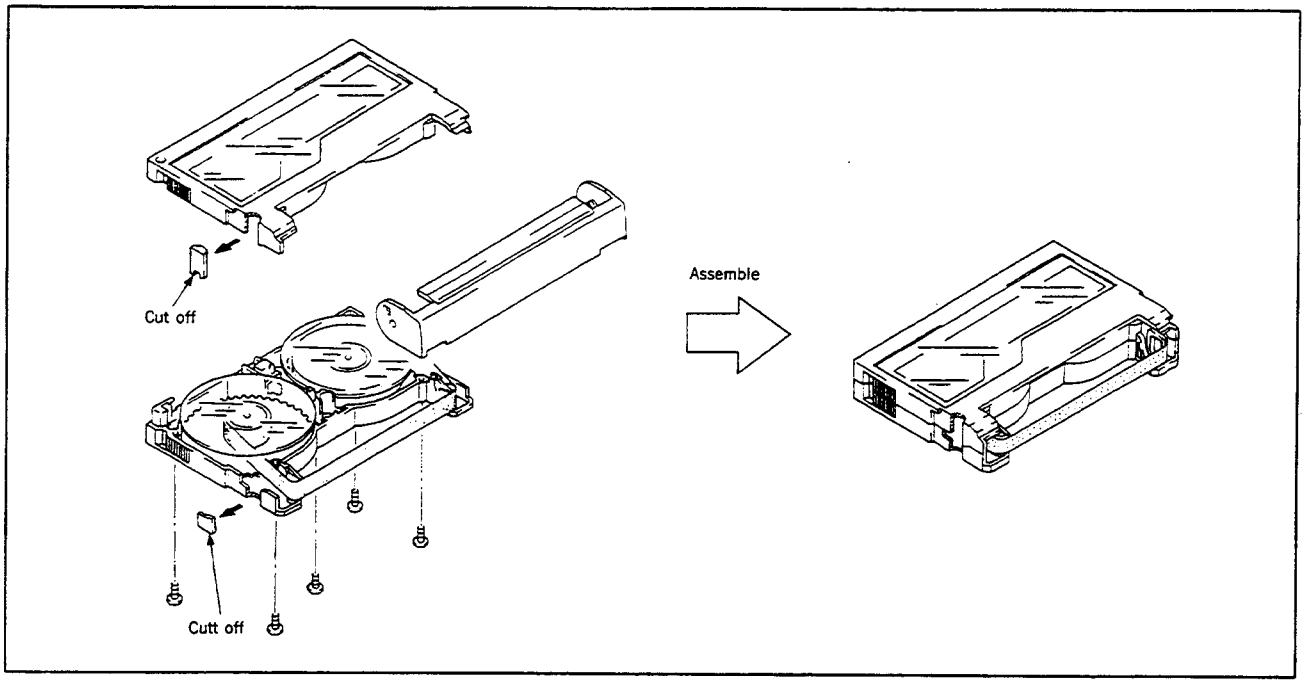


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

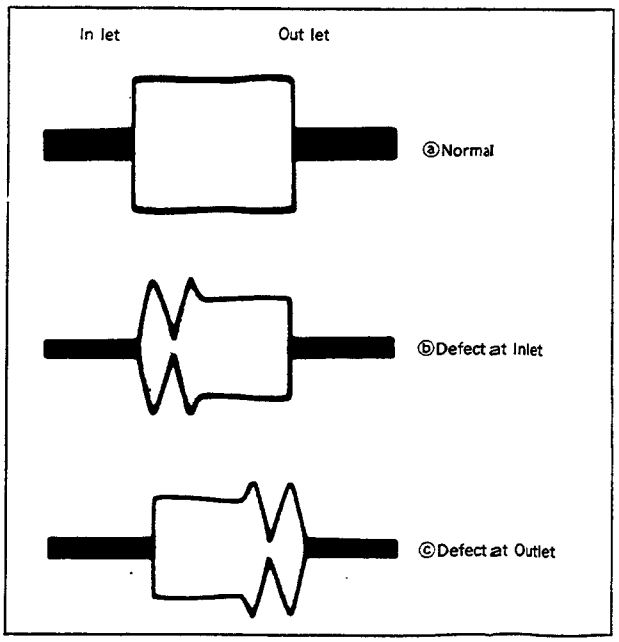


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw 1 and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw 1 to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw 2 and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw 2 to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

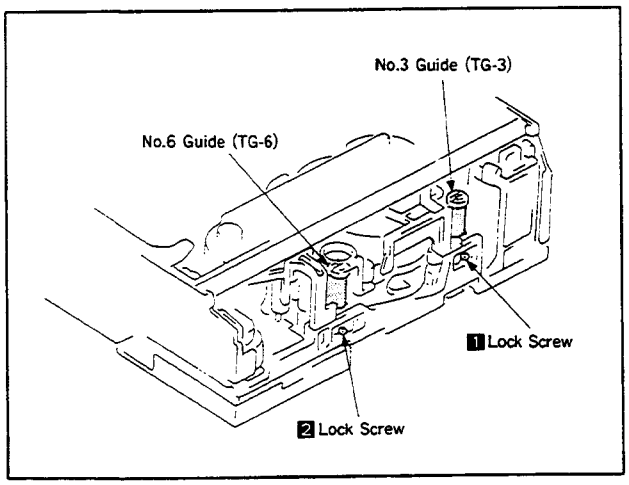


Fig. 36

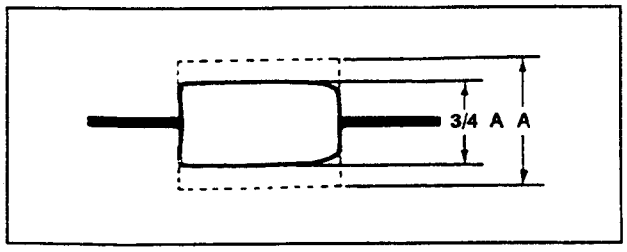


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

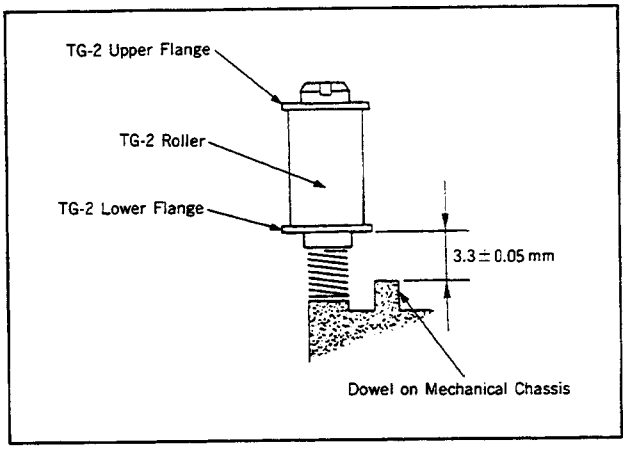


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange 2 of the No.2 guide (TG-2) 1 (Fig. 39). If it is, turn the upper flange 3 of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange 3 of the No. 2 guide (TG-2) 1 90° counterclockwise and repeat step 5.

Repeat steps 5) and 6) until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5).

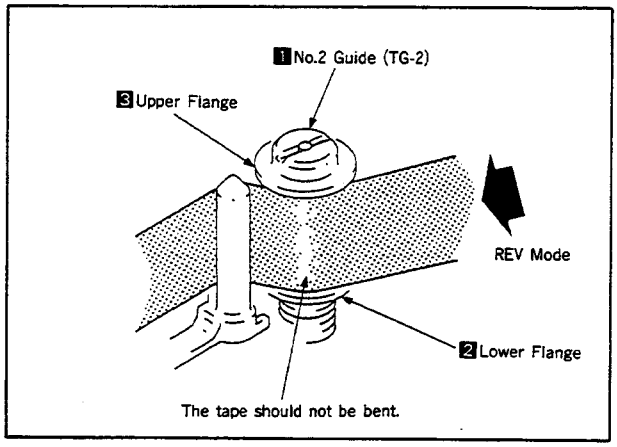


Fig. 39

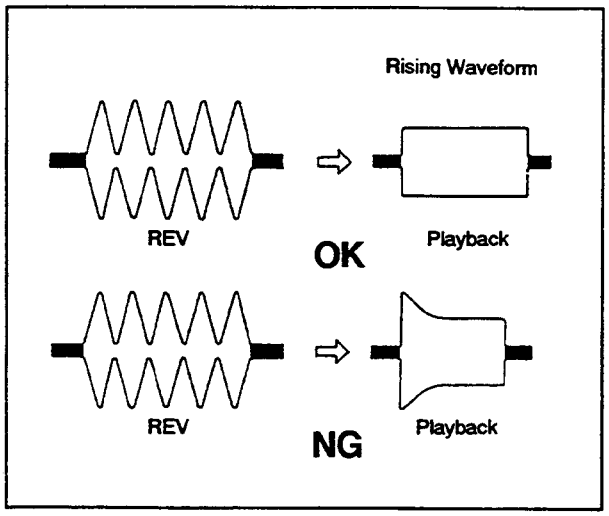


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) 1 and the capstan 2. If it is, turn the hight adjusting screw 4 of the No.7 guide (TG-7) 3 until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan 2 and the hight adjusting screw 4 of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) 3 until bending is within the specification (0.5mm).

If in the REV mode tape bending between the No. 6 guide (TG-6) 1 and the capstan 2 is 0.3mm or less, adjustment can be considered completed.

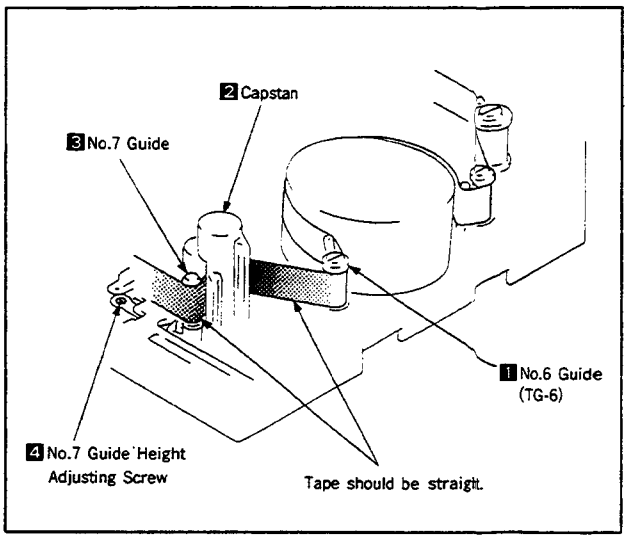


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42). Otherwise, perform section 4-2 Tracking Fine Adjustment.

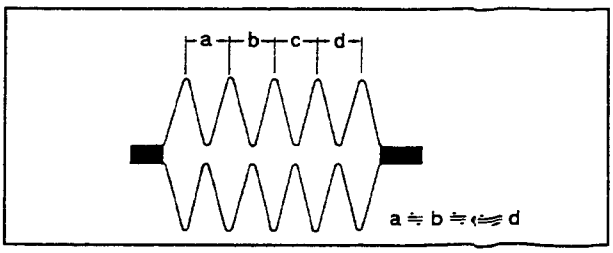


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

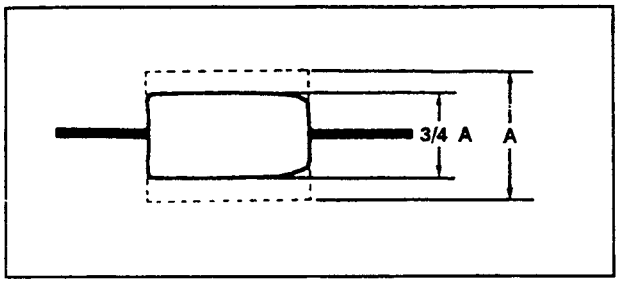


Fig. 43

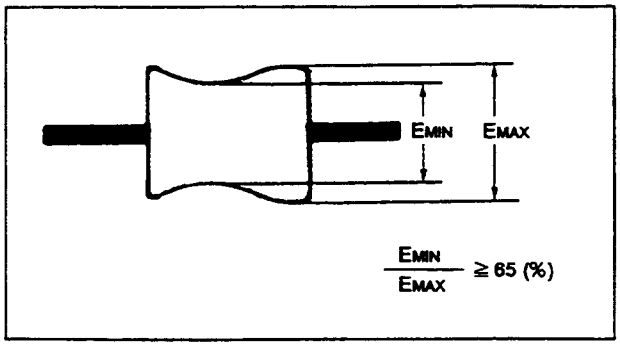


Fig. 44

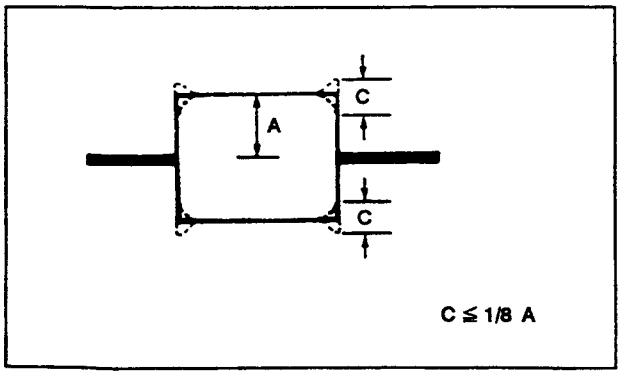


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

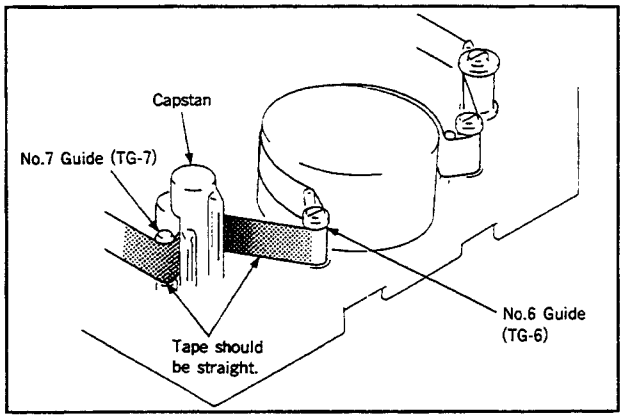


Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

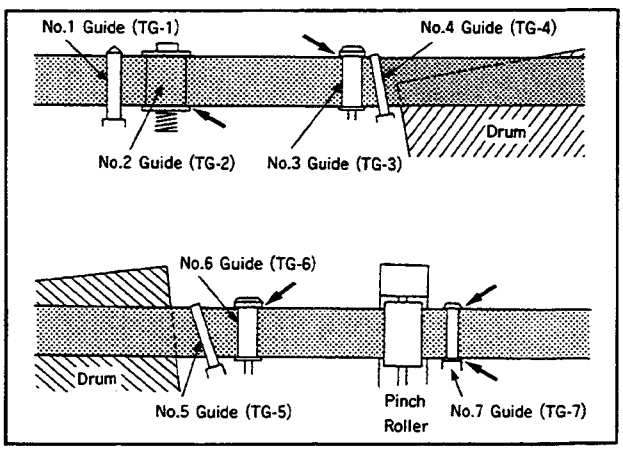


Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

<Connection of Mode Selector IV Conversion Connector>

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

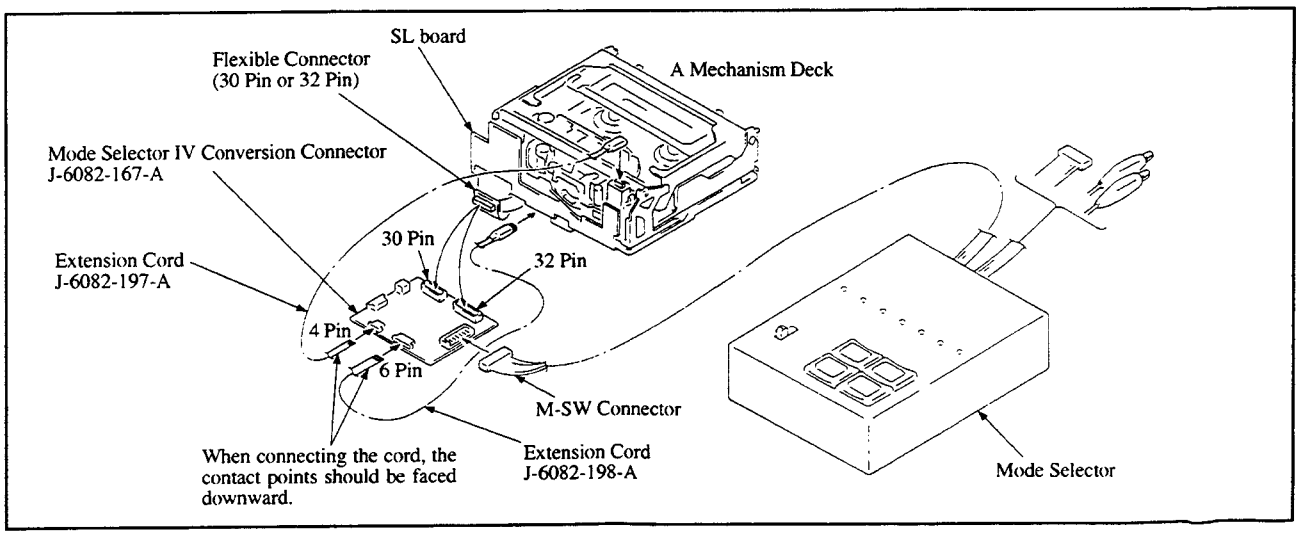
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series. FX500 series → 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.



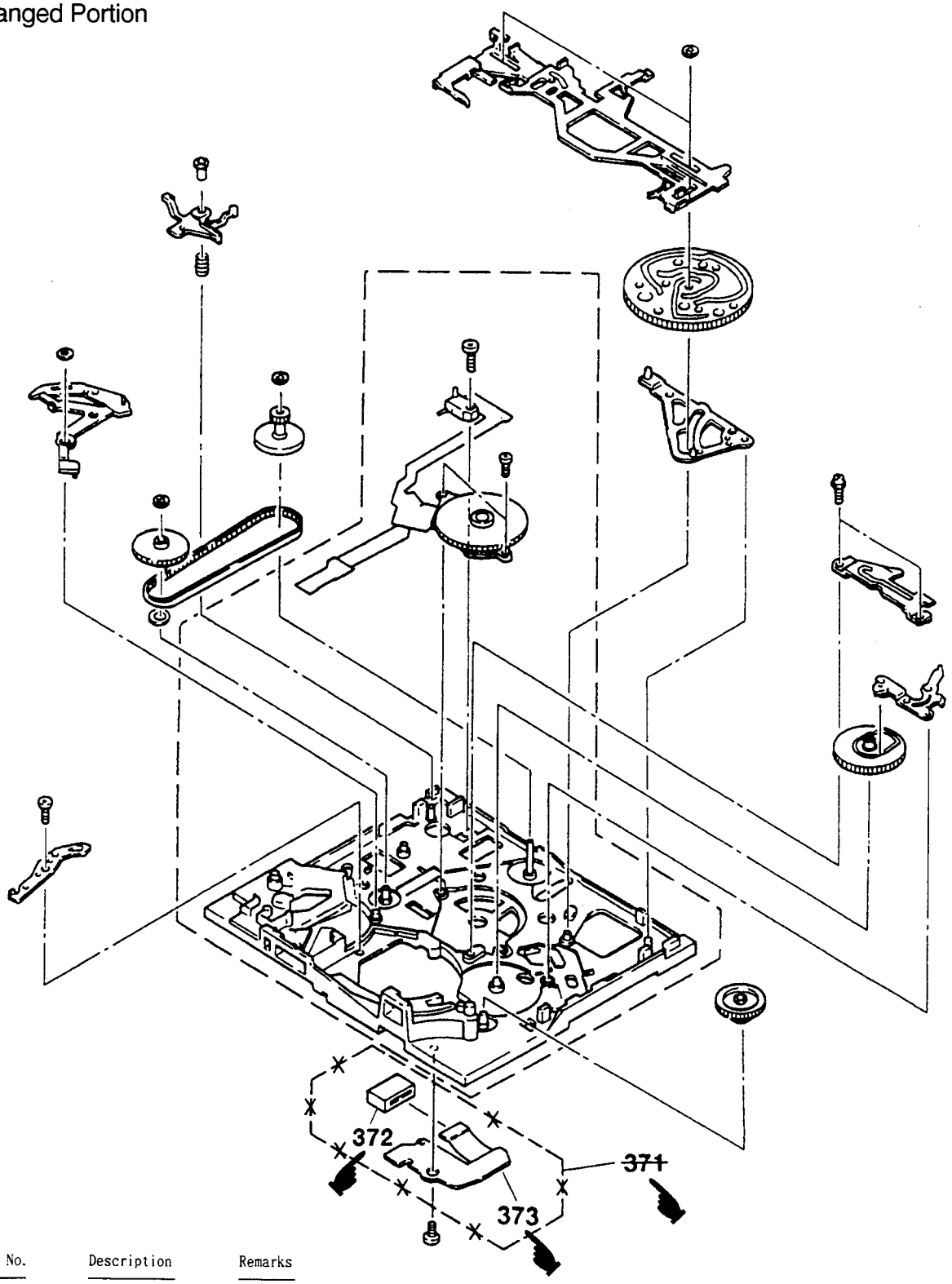
<CORRECTION>

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➡	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

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